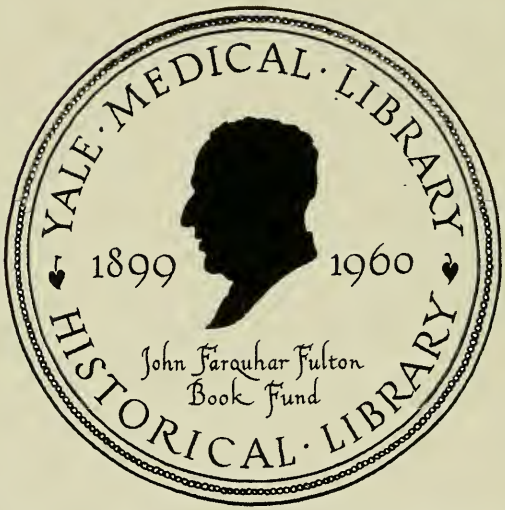
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CASE TEACHING

IN

MEDICINE

A SERIES OF GRADUATED EXERCISES IN THE DIFFERENTIAL DIAGNOSIS, PROGNOSIS AND TREATMENT OF ACTUAL CASES OF DISEASE

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INTRODUCTION

The most important lesson to be learned by every student of medicine is the art of recognizing the physical signs of disease, — a displaced cardiac apex, a succussion-sound, an Argyle-Robertson pupil, a malarial parasite. With these basic facts we can become familiar only by direct contact with patients and by long practice.

But these data of physical diagnosis have to be interpreted. They do not crystallize spontaneously into conclusions. They do not arrange themselves in those significant groups which we call diseases. They have to be worked up into diagnoses by a reasoning process, and this reasoning needs practice. A man may collect with accuracy and thoroughness the data of the history and the physical examination, and then find that he does not know what they mean, — what judgment can safely be based upon them, which of them are of primary and which of secondary importance.

For this secondary and relatively easy step in the development of medical knowledge, one does not need the actual presence of a patient. With a book and a teacher it can be learned anywhere and at any time as well as in the clinic. Indeed it is easier to concentrate attention upon the processes of memory, comparison, and exclusion, which form the essence of diagnostic reasoning, if the senses are not distracted by the presence of the patient. *After the student has learned to open his eyes and see, he must learn to shut them and think*, and when he is thinking the less he has to distract him the better.

To aid the teacher in training his pupils to think clearly, cogently, and sensibly about the data gathered by physical examination is the object of this book. I present these cases because I have found them useful in this type of instruction. They are selected from a much larger number which I have used and tested in "case-teaching exercises" during the past eight years.

Advantages for the Student

1. By means of these cases and others like them we can present a boundless wealth of material, unhampered by the narrowness of our clinical resources.

2. We can present it precisely as it is met with in practice, — the important facts deceptively entangled with what is irrelevant and misleading. Then we can help the student to disentangle the essentials.

3. We can present cases with portions omitted, cases therefore blind and puzzling as they would have been in actual practice had the physician forgotten, as we all forget sometimes, to look for and record certain essential facts.

4. From a point of view distinctly differing from that of the lecture, clinic, or quizz, we can test the pupil's ability to gather up and use the knowledge he has acquired from various sources — from his reading, from the laboratory, from bedside study, and from watching his teachers at work. Case-teaching is thus a valuable method of general review.

5. We can teach the student how to group isolated symptoms into well-knit diagnoses.

Advantages for the Teacher

1. By using this method a single teacher can keep a large class of students actively busy. They are not merely listening or watching; they are doing the work of construction themselves. In lectures or large amphitheatre clinics the whole class is managed by one teacher, but the teacher does the work and hence the student's gain is relatively slight. In laboratory exercises the student does the work, and reaps large profits provided there are teachers enough; but one teacher can rarely supervise more than eight or ten students. In case-teaching, however, the whole class works yet only one teacher is needed.

2. No expensive apparatus or instruments are needed. A room, some books, and a teacher are the only accoutrements called for.

3. By the students' answers and by their questions — which soon come thick and fast if encouraged — the teacher can find out the gaps in each student's knowledge. Knowing these deficiencies early in the year (and not merely from the revelations of final examination books) he is in a position to coöperate with each student in getting the deficiencies filled in, — a position very pleasant for both the student and for the teacher.

4. Very effective lessons on prognosis, on treatment, and on the difficulties likely to be met with in practice, can be given in connection with these cases.

Method of Using the Cases

1. The teacher first reads aloud the case to be discussed while the students follow in their case-books — from which the diagnoses and

the answers to all questions are omitted. As he reads, the teacher may comment on or explain the text so as to make its meaning clear.

2. A member of the class is next called upon *by name*, to summarize the case, to point out whether it is acute or chronic, and what organs or systems are especially involved. *Students must always be called on by name, else the exercise will be a failure.*[1]

3. The students are given five or ten minutes to think over the case and then each writes, signs, and hands in a tentative diagnosis and one or two alternatives on a slip of paper. Each man is thus forced to commit himself *before he hears the case discussed* and before he has gotten any ideas from the other students. By looking over these slips rapidly the teacher can get a good idea of where the class is in relation to the case.

4. The class is now prepared to discuss the case. The teacher calls for diagnoses and writes upon the blackboard all that are at all plausible, discarding only the wild guesses. Next, beginning with the least plausible diagnosis, he calls upon the man who has suggested it to give his reasons for it, — the data supporting it. Then the class is asked to bring up the points against it. If the objections are fatal ones, this diagnosis is scratched off the list; if not, the question is left open until the other diagnoses have been discussed. "Which diagnosis has the most and the strongest arguments in its favor and the fewest and weakest against it?" is the final question, and if there is much doubt about this a vote may be taken so that each man may be put for the second time on record.

5. The teacher then announces the actual diagnosis of the case as it was proved by operation, by necropsy, or by the course of the symptoms. This will be awaited with a hush of excitement and greeted with a buzz of interest if the previous discussion has been well planned. "Why didn't you all make that diagnosis? What was forgotten or misinterpreted?" are the questions next taken up, and the diagnostic part of the exercise is thus brought to a close.

6. Prognosis and treatment are next talked over. Prognosis as to life, as to the probable duration of the case, and as to likelihood of complete and permanent recovery, are separately discussed in each case. In treatment it is well to begin with questions as to the general dietetic,

[1] The only failures that I have seen with this system have been due to the fact that the teacher directed his questions at the whole class or pointed them at a particular student without naming him. If the teacher calls the name from a printed list, and has the men sit always in the same places, it is easy to learn them in the course of a few exercises.

hygienic, and mechanical measures likely to aid this particular case, and to end with drugs. Precise account of the way of administering drugs, their doses, and the full directions to be written on the boxes or bottles containing them, should be demanded.

General Suggestions

1. I have found it important to encourage questions, not only such as are strictly relevant to the matter in hand but any questions that occur to any student during the exercise. If the teacher knows the answer to the question he should refer it to some other student and ask him to answer his classmate. Only if no one in the class knows the answer should the teacher give it himself; for the process of answering serves to fix the fact in the student's mind and he should never be deprived of this benefit.

2. If the teacher does not know the answer, as must frequently be the case when the students are really intelligent and interested, he should say so and then tell the student where to look for it.

3. "What symptoms are missing in that case? What typical signs are absent?" are questions which I have found of value for testing students in a vulnerable quarter. Criticism of the history or of the physical examination as printed in the case-book may also be invited with profit.

4. In connection with one or another of the cases presented in this book the teacher will find a good opportunity to illustrate the common failures and errors of young physicians, to describe his own ways of meeting emergencies, and to detail practical devices for the care of the sick, points not often found in books.

The Character of the Cases here Collected

1. A large proportion of these cases end either with autopsy or with operation, which gives a rather sombre tone to the whole. I have selected a good many of such cases because in case-teaching we need to be able to announce definitively the actual diagnosis, and this can be done with absolute certainty only when some one has seen (before or after death) the result.

2. Some of the cases turn out to be rare ones, but in the discussion of their differential diagnosis we have to deal mostly with common diseases and to say fully as much about them as about the rarer disease which was actually present. Hence most of the time of the class is spent in the study of diseases such as they are likely to meet in practice.

190 Marlboro St., Boston.

February, 1906.

CASE TEACHING IN MEDICINE

A liquor dealer, 47 years old, is seen December 15, 1904. His father died at 67 of "obstruction of the bowels," his mother at 63 of pneumonia. He regularly used whiskey and beer to excess up to 1891 when he had an attack of bloody vomiting after a debauch. He had a similar attack in 1895 and again in 1902. He never was kept in bed more than a few days, and always returned to business within a week. After each attack he gave up all alcohol for periods varying from six months to two years and then relapsed into his former habits. He has suffered for years from digestive disturbances, "sour stomach," which have been much worse during his periods of alcoholism. After twenty months of abstinence he began to drink about three months ago, and since then has complained of anorexia, pain, eructation of gas, nausea, and vomiting. The pain is located in the epigastrium, comes on ten to fifteen minutes after eating and is relieved by vomiting. On the afternoon of December 11 he vomited a small quantity of bright red blood, and since then he has vomited after nearly every meal, but he has noticed blood only on one other occasion, two days ago, when he threw up nearly a pint. He has noticed black stools for several days. He has recently lost about 15 lbs.; present weight 185. Mucous membranes pale. Heart normal in size, action regular, soft systolic murmur at apex, not transmitted. Pulmonic second sound not accentuated. Abdomen tympanitic throughout, slight tenderness on pressure over epigastrium. Liver dulness extends from fifth interspace to two fingers' breadth below costal margin where a smooth edge can be felt. Lower edge of spleen felt on full inspiration. Physical examination otherwise negative. Pulse 100, regular, of good quality. Temperature 98.4°. Urine, sp. gr. 1020, acid, no sugar, no albumen, Hg. 50%, red cells 3,172,000, no nucleated cells. Leucocytes 9200.

1. What is the type of anæmia in this case? Typical secondary.
2. Significance of the patient's family history? None whatever. (Teacher may bring up here a discussion of the problem: in what cases is family history of value?)
3. What causes produce tarry stools? Bismuth, iron, blackberries, blood from high up in gut.
4. How do you interpret the cardiac signs here present? Functional murmur.
5. What are the commonest causes of splenic enlargement? Typhoid, malaria, rickets, cirrhosis, leucæmia, anæmia.
6. What causes of hæmatemesis should be considered here? Gastric or duodenal ulcer, cirrhosis, aneurism.
7. Diagnosis? Prognosis? Treatment?
   Diagnosis: Hepatic cirrhosis, ruptured esophageal varix, secondary anæmia, passive congestion of stomach.
   Prognosis: Probably one to two years to live.
   Treatment: Stop liquor, treat anæmia, regulate diet. Possibly Talma's operation.

A fireman of 26 was exercising engine-horses, riding one and leading another. The led horse fell and, as he struggled to rise, wrenched severely the arm of the fireman, who had not let go the halter. He thought nothing of it at the time, but twenty-four hours later began to be distressed by a sense of weight and pressure beneath the sternum, near the attachment of the wrenched pectoral. Under medical advice he was laid off duty and treated with liniments and counter-irritation, but without relief. Three weeks' vacation in the country benefited him, but on his return to work he was unable to drive or even to put on the foot brake without great exhaustion. Now he cannot walk a block fast without feeling tired out and experiencing a sense of pressure under the sternum. His wife tells him that he moans and grinds his teeth in his sleep. He has lost flesh, strength, and color.

The heart's apex is in the fifth interspace and mammary line. There is reduplication of the apex second sound, and at the fifth left costal cartilage a systolic murmur, louder in the recumbent position. The pulmonic second sound is slightly louder than the aortic.

Interrupted inspiration is detected in both fronts and both interscapular regions, also transient rales in the sixth intercostal space in the left axilla. Abdomen negative. The blood and urine are normal.

1. What is the usual significance of moaning and teeth grinding during sleep? Functional cerebral irritation; no organic disease. Common in rickets and in neurotic children. Popular fallacy that "worms" are the cause. Types of delirium and of somnambulism may be here discussed.
2. How is the loss of flesh, strength, and color to be explained? (See below under diagnosis.) Causes of emaciation and of pallor may be considered here.
3. How are cardiac murmurs affected by change of position? All systolic murmurs are louder in the recumbent position. Presystolic murmurs are louder in the erect position, while diastolic murmurs are unaffected.
4. Diagnosis? Prognosis? Treatment?

   The Diagnosis is traumatic neurosis. Aneurism is excluded by the age, the acute onset, and the lack of evidence of mediastinal pressure. Local trauma is not important, for after the vacation the symptoms were general, not local. Chronic latent diseases "lighted up" by the accident (phthisis, anæmia, nephritis) are excluded by the negative physical examination. Traumatic neurosis is further suggested by the interval between the accident and the onset of symptoms. (Cerebral hemorrhage may come on many hours after a blow, but always produces physical signs of brain injury, as paralysis or aphasia.)

   The Prognosis is good if treatment is wise. He should be well in six months, but may have to change his occupation.

   The Treatment is first encouragement and reassurance. Everything should be done to attract attention from the seat of supposed injury. Local applications (here given) are the worst possible treatment. Advise work of another kind, a bitter tonic for appetite, and hydrotherapy for sleep.

A medical student of 25 has been troubled with his joints for ten years. Attacks of pain and stiffness lay him up whenever he is subjected to any strain, mental or physical. He has had little or no fever, he thinks, in any of the attacks, but the pain and swelling have been considerable. He has, as a rule, one or two bad attacks each year, with a week or two in bed.

The knees, ankles, hips, hands, wrists, and elbows have been affected, and in every case some stiffness and more or less swelling has remained after the pain left. Both sides are affected nearly alike.

Of late years the attacks have grown less severe, especially since his family has grown more prosperous and more harmonious. He is now able to attend to most of his medical work.

Examination shows no motion in the left wrist and very little in either ring finger. The range of motion in the knees and elbows is also considerably limited. The fingers are cold, mottled, and damp. Some of the finger joints and both wrists are doughy and semi-fluctuant. There is no evidence of bony enlargement anywhere.

The heart and internal viscera are negative, but the boy is pale and rather thin. Blood and urine normal.

1. Types and causes of arthritis? Infectious (including acute "rheumatism") atrophic, hypertrophic, gouty, neuropathic, hæmophilic.
2. What varieties of arthritis are often associated with cardiac disease? Only the infectious types: *e.g.*, "rheumatic," septic, gonorrhœal, scarlatinal, pneumococcal. Tuberculous and syphilitic infections of joints are rarely associated with endocarditis.
3. What important data are not mentioned in the above description? X-ray examination, data regarding gonorrhœa and regarding muscular atrophy.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: X-ray examination showed marked atrophy of the articular ends of the bones. There was marked muscular atrophy. No history of gonorrhœa or of any other infection. The absence of any known infection, the long progressive course in a young person, the symmetrical involvement of joints, the vaso motor signs, the absence of marked fever, and the X-ray evidence all point to *atrophic* arthritis and serve (with the negative condition of the viscera, blood, and urine) to exclude other varieties.

   Prognosis: Most cases slowly progress, but with favorable environment, hygienic and psychic, some cases are arrested, as in fact this one was, before crippling damage occurs. In such cases the injured joints never return to the normal, but the patient learns to adapt himself. Any mental or physical strain is likely to produce recrudescence, more or less serious.

   Treatment: Drugs have no effect save as they may help to improve the general nutrition (bitters, iron, arsenic). Salicylates do harm. Rest in the acute attacks, with warmth to the joints, forced feeding, out-door life so far as the joints permit, encouragement and freedom from worry, are important aids to recovery. The excision of ankylosed joints may be necessary.

A married woman, 43 years old, is seen April 9. Family history negative. Has had three children, the youngest being twenty years old, and no miscarriages. Eighteen years ago she began to suffer from profuse menstruation which became so excessive and exhausting that eighteen months ago the uterus and appendages were removed. In spite of the cessation of the hemorrhages she says that she has lost ground and grown paler more rapidly since the operation. For the past six months nose bleeds have been frequent and at times so excessive that the nares have been plugged. She has had "feverish turns," lasting several days at a time, but her chief complaint has been of weakness, great dyspnœa, palpitation, and attacks of faintness. Micturition has been more frequent for the past few years, but without any polyuria. Her legs and ankles have been considerably swollen, but this has been much less apparent lately. About a month ago she had a copious epistaxis, followed, four days later, by a second, less severe, and has remained in bed ever since. Her temperature was first taken March 28, when it was found to be slightly above normal. Without discoverable local cause, it rose steadily till it reached 103° six days later. It fell to normal two days later, but the evening record has since been several times as high as 99.4°. With the rise in her temperature, her color, previously very pale, became lemon-yellow, but the conjunctivæ remained a pearly white. She was greatly exhausted and somewhat delirious, vomiting occasionally either food or bile-stained mucus. A very grave prognosis was at this time given by the attending physician.

When seen April 9, patient reported herself as feeling very well, and her mental condition was bright. She was markedly anæmic, but with only a slight yellow tinge remaining. The tongue and mucous membranes were very pale. There was a deep ulceration on the left side of the nasal septum and several crusts were seen on the right. A systolic murmur was heard in the vessels of the neck. The heart's apex was in the fifth space in the nipple line. The cardiac dulness extended a finger's breadth and a half to the right of sternum. A systolic murmur was heard all over the precordia, rough over the base, but becoming softer as the apex was approached and transmitted a short distance into the axilla. The pulmonic second was slightly accentuated. The upper border of the liver was at the fifth rib, and its smooth edge could be felt two fingers' breadth below the costal margin. The edge of the spleen was readily palpated. The ankles were slightly œdematous. The ophthalmoscope showed a normal fundus. Physical examination was otherwise negative.

Urine, sp. gr. 1012, pale, acid, contains the slightest possible trace of albumen. Sediment slight, consisting of leucocytes, and a rare normal red cell; no casts. A blood count on April 3 showed 300,000 reds, 5400 whites, Hgb. 10%. A differential count of 400 whites showed polymorphonuclear 72%, large mononuclear 12%, small mononuclear 15%, eosinophiles 1%. Ten megaloblasts, 5 normoblasts, and 3 microblasts were seen. Poikilocytosis, macrocytosis, and polychromatophilia were present. A second count made to-day showed 1,000,000 reds, 5800 whites, Hgb. 25%. A differential count of 300 white cells showed no special change in the proportions. Four megaloblasts, 11 normoblasts, and 2 microblasts were found.

1. What are the common causes of frequent micturition in women and in men? In women, (*a*) nervousness and debility from any cause; (*b*) less often cystitis ("simple," gonorrhœal, tuberculous, or calculous); (*c*) the pressure of the pregnant uterus or other tumors; (*d*) pyelitis (tuberculous or septic). In men, (*a*) prostatic obstruction and its results; (*b*) cystitis (gonorrhœal, tuberculous, etc.); (*c*) pyelitis (as in women). Occasionally, in either sex, chronic nephritis may produce frequent as well as profuse micturition.
2. What are the possible causes of a systolic murmur like that here described? (*a*) Arterio sclerotic roughening of the aortic arch or of the aortic valves; (*b*) Anæmia and other causes of insufficient muscular contraction of the valve-orifices (but such murmurs are usually louder in the pulmonary area). (*c*) Aneurism of the aorta; (*d*) Aortic stenosis (*provided always* that other signs of that lesion are present, thrill and plateau pulse especially).
3. How are the "feverish turns" to be explained in this case? Fever in chronic anæmia, especially pernicious anæmia, is not uncommon. After any profuse hemorrhage it often occurs in neurotic persons.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The blood is characteristic of pernicious anæmia. The hemorrhages are probably symptoms, not causes, of the anæmia, for such a blood picture rarely if ever results from hemorrhage of the type here described. The respiratory, cardiac, and digestive symptoms, as well as the œdema, weakness, and fever, can be explained by the anæmia. Other diseases are excluded by the absence of physical signs pointing to them.

   Prognosis: A wave of improvement has apparently begun in this case and there may be one or two periods of great improvement, or even perfect health lasting several months each. Within two years death is almost certain to follow. Perhaps two cases in a hundred recover.

   Treatment: Fowler's solution, 2 drops after meals well diluted and increased 1 drop daily until toxic symptoms appear, is considered the best method of prolonging life; 50 to 60 drops a day may be taken for some weeks. A few cases have improved after vigorous laxative treatment, *i.e.*, enough cascara to produce several movements daily for weeks at a time. Rest, fresh air, and as much food as the stomach will bear are indicated. Hemorrhages are to be checked by pressure with gauze, with or without adrenalin solution. Iron. oxygen, and bone marrow are of no value.

A vigorous man of 62 comes of a gouty family, many members of which have been long-lived. His mother is said to have died of cancer, seat unknown; and a paternal uncle of gastric cancer. In recent years the patient had had two brief attacks of pain and swelling in the great toe-joint; he has also had eczema, said to have been considered of gouty origin. For some years he has occasionally lost moderate quantities of fresh blood from the rectum. He has been a good, though not a free liver; and has always taken much exercise in the open air.

Six months ago he was duck shooting on Lake Erie, and, the water being very low, he says that for three weeks he worked harder than ever before in his life, pushing and dragging his boat in shallow water. After returning home he felt tired and was indisposed to exert himself in any way. Soon after he began to suffer every few days about 1 P.M. from severe continuous pain just below the right costal border and outside the edge of the rectus muscle. The pain bore no apparent relation to the quality of food; the attacks lasted from one half an hour to three hours, and were relieved by the passage of gas upward or downward. Sometimes the escape of gas seemed to be promoted by cooking soda or aromatic spirits of ammonia. The pain is sometimes very sharply localized, even to a point no larger than the finger tip; but sometimes spreads to the left and downward over an area as large as the palm of the hand. Gradually the attacks have increased in frequency and come on daily; of late, toward 5 P.M. There has been at times slight nausea, apparently due to the extreme severity of the pain. He never vomited until two days before he was seen, then repeatedly during the night; the vomitus was not characteristic. Position does not seem to influence the pain except in so far as it may aid the expulsion of gas.

A week or ten days before he was seen, he had on two successive days black movements of the bowels, one very copious, unattended by rectal pain, faintness, or subsequent loss of color. Fever has been absent, and the urine negative. The appetite and ordinary digestion have been fair; there has been no noticeable loss of flesh or color. The tongue is slightly coated, the fingers show some gouty deposits, there is some tenderness on deep pressure just above and to the right of the navel; the smooth edge of the liver can be felt to descend below the right costal border, but only on full inspiration. Physical examination is otherwise negative.

1. What diseases often cause epigastric pain relieved by the belching of gas? Dyspepsia of various types, angina pectoris, neurasthenia. Usually motor disturbance and not fermentation is the cause of such belching.

2. What type of stomach trouble is to be expected at the age of 62? Cancer; rarely ulcer; sometimes the gastric symptoms depending on gall-stones and their results.
3. What is the relation of the gout to the other symptoms? Gout and arterio-sclerosis are often closely associated. Arterio-sclerosis is one of the diagnoses to be considered in this case.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Duodenal ulcer is strongly suggested by the position and sharp localization of a pain which tends to occur when the stomach is empty, by the tarry stools and the relief by alkalies. Hepatic cirrhosis is possible, but rarely causes such pain and cannot be diagnosed unless evidence of portal stasis appears. Angina pectoris may cause abdominal pain relieved by belching, but never produces melæna. There are no physical evidences of arterio-sclerosis, but it may nevertheless be present. On the whole, the chief symptoms in the case seem best explained by the diagnosis of duodenal ulcer. The course of the case apparently confirmed this diagnosis.

   Prognosis: Most cases recover under proper treatment in the course of many months, but relapses are not uncommon.

   Treatment: Exclusive rectal feeding for ten days. Then a gradual return to full diet with meat and fish almost or quite excluded. Carbohydrates and fats should make up almost the whole of his diet, but milk may be taken freely. If the symptoms persist or recur, operation may be necessary.

A child, 7 years of age, of healthy parentage, had made frequent complaint of pain in the left side of abdomen and was found by her mother to be rapidly losing flesh and strength. There was also an account of quite frequent voiding of high-colored urine, with a brownish sediment.

After several weeks the emaciation progressing, the mother noticed that the left side of the abdomen was larger than the right; that there was pain and tenderness on pressure, and that periods of "constipation" occurred, followed by the escape of large quantities of semi-liquid fæces, without much change in the size of abdomen or relief to the pain and tenderness in left lumbar region.

About this time the patient was taken to a physician, who confirmed the mother's observation of loss of flesh and strength, for the child was pale or sallow, emaciated and extremely weak. In the left lumbar region a mass, irregular in outline and surface, painful on palpation, extended into the umbilical region and upwards to the margin of ribs in front; percussion showed tympanitic resonance over the central portion of the tumor. Elsewhere the tumor was flat on percussion.

A specimen of urine showed: Reaction, acid; sp. gr. 1014; sediment, brownish and consisting of blood and brown granular matter. There were no casts, and the quantity of albumen present was small.

1. What abdominal tumors are most frequent in children? Sarcoma of kidney; congenital cystic kidney, dilated colon, secondary enlargements of spleen and liver.
2. How are tumors of the kidney to be distinguished from enlargement of the spleen? The sharp edge of the spleen and its notch can usually be felt. The kidney produces a rounded tumor palpable bimanually with one hand in the flank. The inflated colon traverses tumors of the kidney but passes behind those of the spleen.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: The age, the tumor, the emaciation, the hæmaturia without casts, the apparent anæmia, strongly suggest malignant disease of the kidney, and at this age sarcoma is the commonest type of malignant renal disease. Congenital cystic disease of the kidneys does not produce such cachexia and is almost never associated with hæmaturia. The condition of the bowels excluded dilated colon. The characteristics of this tumor are not those of a spleen. The tympanitic resonance over its centre is very possibly due to the colon.

   Prognosis: Recovery after operation has occurred, but is rare. Operation in this case confirmed the diagnosis, but was followed by recurrence and death six months later.

   Treatment: Surgical interference offers the only hope of recovery and should be undertaken at once. Medical treatment can only alleviate the present symptoms, — *i.e.*, the emaciation, hæmaturia, and pain.

A married woman of 50, has had three children, the youngest 17, no miscarriage, and has passed the menopause without disturbance. Soon after the birth of her second child she became unconscious with dilated pupils, had convulsions, right hemiplegia and aphasia but recovered entirely. Her domestic life has not been happy for some years. During the eighteen months that she has been under the care of her present attendant she has had emotional attacks, periods of mental depression and insomnia, goes to bed, refuses food, and if crossed becomes hysterical. Passed last summer in the country with benefit. In the autumn she went to the office of her physician for swelling of the face and puffiness of the eyelids, and complained that the skin was dry and perspiration deficient. Nine months later these symptoms persist. She denies special sensitiveness to cold. Several examinations of the urine have been made with negative results. The twenty-four-hour quantity is not known. The pulse is 72, regular; the temperature normal; the blood negative; the tongue clear. The complexion is somewhat waxy; the eyelids are rather baggy and translucent; the whole face had a puffy look. The skin — on a warm day, June 17 — is slightly moist. Visceral examination is negative except for a mobile right kidney. No motor paralysis; reflexes and sensibility normal.

1. What is the significance of the mobile right kidney in relation to the other symptoms of this case? It is insignificant and the physician should on no account mention its presence, which may give rise to great alarm.
2. What was the cause of the hemiplegia and aphasia? The toxæmia known as eclampsia seems to account for them. A small cerebral hemorrhage is possible.
3. What test would make the diagnosis easier? (See diagnosis.)
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The age and sex, the mental symptoms, the dry skin and puffy, waxy face, with negative urine and heart, strongly suggest myxœdema. The therapeutic test (see question 3) confirmed this suggestion. Thyroid extract produced a rapid improvement and final cessation of all the symptoms. The only atypical features of the case are the absence of subnormal temperature and of sensitiveness to cold. The apparently eclamptic seizure in early life is interesting in view of the possible connection between eclampsia and deficient thyroid activity which various writers have recently suggested.

   Prognosis: Under persistent thyroid treatment she should remain well for her natural term of life.

   Treatment; Any of the standard thyroid tablets may be given in doses of 2 grains thrice daily, gradually increasing until the pulse rate quickens. The drug should then be continued at whatever dose can be borne without materially increasing the pulse rate above normal. Considerable loss of weight usually takes place in the earlier weeks of treatment.

A coachman, 42 years old, of good family history, is seen April 20. Health has always been good except for a severe attack of penumonia three years ago, which was followed by phlebitis in the left femoral vein. The left leg has remained somewhat swollen, and has been tense and rather painful toward night. It has caused rather more discomfort than usual during the past few days. Yesterday morning he got up feeling as usual, but on reaching the house of his employer felt nauseated and had some diarrhœa, which continued during the day. He felt feverish and weak. Went to work again this morning, but gave up after half an hour owing to nausea and pain in the lower abdomen, and went to bed. At eleven o'clock had a distinct chill. Was seen for the first time at 12.45 P.M. The patient was a stout man who looked acutely sick. The chest was negative. Owing to a thick fat layer, examination of the abdomen was not altogether satisfactory; it was somewhat distended and tympanitic and there was considerable tenderness over the lower portion below the level of the iliac crests, but no area of special tenderness, nor could a tumor be felt anywhere. The left leg was somewhat larger than the right throughout. The skin below the knee pitted slightly on pressure. There was a little tenderness over the femoral ring. The temperature was then 103, pulse 110, respirations 26. At 3 P.M. urgent summons were received to call immediately as the patient had had a convulsion, was breathing rapidly and with great difficulty, and was very cyanotic.

1. What are the commonest causes of cyanosis? Heart disease (valvular or parietal), emphysema, pneumonia, asthma, methæmoglobinæmia (usually from acetanilid in headache powders).
2. What important data do you miss in the account of this case? A leucocyte count and urinary examination.
3. Do you expect a leg to remain swollen three years after an attack of phlebitis? Yes; the leg does not often regain its normal size.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The symptoms at the first visit were very indecisive. Diarrhœa, nausea, abdominal pain with fever and weakness, suggest nothing more than acute gastro-enteritis, and even the tenderness found in the lower abdomen is not distinctive. Peritonitis (possibly from appendicitis) was considered. But the history of an old femoral thrombosis and the tenderness over the femoral ring lead us to think that the thrombus may have progressed up into the abdominal veins and to interpret the later pulmonary symptoms (sudden onset of dyspnœa and cyanosis) as pulmonary embolism from the thrombosed abdominal veins. Autopsy showed this condition.

   Prognosis: Pulmonary embolism is almost invariably fatal within a few minutes or hours, but a few cases with all signs of the disease have recovered.

   Treatment: Oxygen is usually administered and may possibly be of some service. Otherwise the treatment is purely expectant and symptomatic.

J. B., male, aged 32 (occupation, cook), came to the out-patient department of the hospital Jan. 6, 1899. His family history was negative and previous history good. He denied any syphilitic infection, but admitted having had a urethritis some years previously. He had never had an attack similar in character to this. The present illness he dated from December 30, 1898, eight days before applying for relief at the hospital. The first symptoms seemed to have come on rather suddenly with a rigor of marked severity, followed by fever and, later, by profuse sweating. Almost immediately afterward he was seized with intense muscular pains, extending over the trunk and limbs; these pains were agonizing in character, increased on the slightest exertion, and had been present, with varying degrees of severity, until his admission. They prevented him from sleeping, and were spoken of by the patient as being not unlike rheumatism, *i.e.*, dull and aching, while he was in the recumbent posture, becoming intensely lancinating as soon as the slightest exercise was attempted. His appetite, which had previously been of the best, was absolutely lost and he had eaten nothing for three days. With the exception of some slight frequency of micturition and a slight cough with expectoration, there was nothing else of importance in the history of the illness.

Examination: The patient is rather a large, well-formed man, the mucous membranes of good color, tongue moist, and with a slight white fur. The eyes are markedly injected, the eyelids slightly but distinctly œdematous, and an erythematous area above the swelling. Negative results were obtained everywhere on auscultation and percussion, except at the bases of both lungs behind, where a few moist rales were made out. The heart sounds were quite clear. The liver and spleen were not palpable; the abdomen was soft and natural in appearance, negative results being obtained on palpation. No rose spots were seen. There was no superficial glandular enlargement. Pulse was 100, respiration 24 to the minute. The temperature ranged in the vicinity of 103° for three weeks and then gradually subsided. The urine was normal in color, acid, sp. gr. 1026. Microscopically, it showed pus-corpuscles in considerable quantity, epithelial cells, and a few mucous cylinders.

1. What important information might be gained by testing the knee-jerks in this case? Neuritis — one of the diagnoses to be considered in this case would be suggested if the knee-jerks were diminished or absent.
2. Commonest causes (*a*) of absent knee-jerk? (*b*) of increased knee-jerk? (*a*) Neuritis, tabes, anterior poliomyelitis. (*b*) Brain hemorrhage or other organic brain lesion (focal or diffuse), spastic paraplegia, pressure myelitis, chronic arthritis.

3. What infectious diseases cause severe pains in the trunk and limbs? *Grippe, tonsillitis*, variola, dengue, trichiniasis, yellow fever. Milder pains accompany some cases of typhoid, sepsis, pneumonia, or any other infection.
4. What further examinations would throw light upon your preliminary diagnosis here? Blood examination and tests of the deep reflexes.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Blood examination showed a leucocytosis. This suggested a differential count which revealed a very marked eosinophilia. A bit of the biceps muscle was then excised and trichinæ were demonstrated in it by histological examination. If blood examination is included in our investigation of such a case, diagnosis (in temperate climates) is usually very easy as there is no other chronic febrile disease with eosinophilia and severe muscular pains. In the tropics other fevers complicated by the presence of intestinal parasites may be hard to distinguish from trichiniasis unless trichinæ are found in the muscles. In any climate many cases closely simulate typhoid and without blood examination are sure to be mistaken for it. Others pass as "muscular rheumatism."

   Prognosis: Most cases recover in the course of a few months or less. Relapses are rare.

   Treatment is thus far inefficient. We seek to relieve pain and support strength.

The patient is a contractor of 50. He is of heavy build, stout and red in the face. For several years he has had violent cough in the winter, accompanied by vomiting. A daughter of 16 some years ago ran off with a man and got married. He took to his bed, cursed, cried, called for his pistols and was going to kill the husband, but calmed down soon and the young people were sent for. His physician thinks he does not use alcohol in notable excess. Two weeks ago he began to complain of tearing and cutting pains in his legs, accompanied by slight œdema, and for several days now he has been in his bed. Fever has been absent. There has been some vomiting, not specially characteristic in any way. He has been much excited and has threatened to kill all Democrats. Sleep has been poor. The pains in the legs have continued, but less severely since he took to bed.

The pulse is 80, regular, the tongue heavily coated, thorax negative. The edge of the liver can be felt two inches below the costal border, apparently smooth of surface. Motion and tactile sensibility in the legs seem normal, but the leg muscles are tender and the knee-jerks are very slight, even on reënforcement. The urine report is negative.

1. What important facts about his early history do we need to know? Has he had syphilis? How much alcohol has he taken?
2. Why is his sleep poor? Poor sleep in an active man should always suggest alcoholism, though there are of course many other causes.
3. Why is the liver smooth? All types of enlarged liver (except those due to cancer and syphilis) are usually smooth as felt through the belly wall. The "hobnails" of cirrhosis can rarely be felt, so that smoothness does not exclude cirrhosis. Fatty infiltration seems however, more likely.
4. What is meant by reënforcement of knee-jerks? We distract the patient's attention and concentrate brain control on the muscles of his hands by making him lock his hands together and then break them apart just when we tap on the patella tendon. This tends to "bring out" knee-jerks.
5. How is the œdema of the legs to be accounted for? (See diagnosis.)
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: The pains and tenderness in the legs, with diminished knee-jerks and œdema, strongly suggest neuritis. The pupils must be tested. If they are normal, tabes is unlikely, especially as the pains here present are not at all characteristic of tabes. It should be pointed out that œdema is not uncommon in neuritis, not only in the epidemic form ("wet" beri-beri) but in ordinary alcoholic cases. Other causes of œdema (cardiac, renal, hemic, local — *e.g.*, varicose veins) must be excluded.

   The cause of the neuritis is probably alcoholism, despite his physician's statement. This would also explain mental symptoms, vomiting, and enlarged liver. Dementia paralytica is excluded by the local signs in the legs and liver.

   Prognosis: If alcohol is given up recovery should follow. It proved so.

   Treatment: Stop alcohol. Relieve pain by local applications and electricity. Give bromide and trional for sleep, capsicum and nux vomica for appetite.

A female domestic, 29 years old, single, lost her father, a dissipated man, from phthisis. She herself was chlorotic five years ago, but has been otherwise well. A year ago she took a severe cold, and after a few days felt a sudden intense pain in the left lower axilla. Cough followed, with little or no sputa. She was not long laid up, but has been short of breath on exertion ever since. She denies persistent cough, and states that it is present only when she takes cold; expectoration at these times is scanty, but has several times been blood-streaked. She thinks she has lost no flesh and has not been feverish. She has been and is now steadily at work. Her employer sends her to be looked at while the physician is visiting a member of the family.

The general appearance is that of health; pulse and temperature normal. She complains only of dyspnœa on exertion, dry cough, and anorexia. The chest is symmetrical; the interspaces are well defined; no cardiac impulse is visible; the left chest dilates less than the right. The heart sounds are loudest, and the impulse best felt just below the ensiform cartilage; the sounds are normal. The cardiac dulness seems to extend farther than usual to the right of the sternum. The right chest is hyper-resonant throughout, with puerile respiration. The left chest, including the cardiac area, is tympanitic with very feeble respiration and absence of vocal fremitus. In the left lower axilla there is faint, amphoric breathing.

1. What pulmonary diseases cause pain? Pleurisy ("simple," tuberculous, or pneumonic), malignant disease.
2. Significance of bloody sputa? If blood appears in streaks it is usually from the throat (pharyngitis). In phthisis blood is usually in larger amount.
3. What do you infer from the fact that this patient has not felt sick enough to disable her from work and has the appearance of health? The disease, whatever it is, must be producing chiefly, local, not constitutional effects.
4. Under what conditions is the cardiac impulse absent? Thick chest walls or emphysema may hide the heart; pleural effusion, pneumothorax or adhesions may displace it behind the sternum. Its beat may be too weak to feel.
5. In what diseases may cardiac dulness extend more than 2 c.m. beyond the right sternal margin? Whenever the right heart is distended, and whenever the heart is displaced to the right from any cause.
6. Significance of puerile respiration? Extra work done by the lung.
7. What changes in the blood and urine do you expect in this case? Normal blood, possibly a slight leucocytosis. Probably normal urine; possibly albuminuria and a few casts.
8. Diagnosis? Prognosis? Treatment?
   Diagnosis: Succussion produced a loud splash. Pneumohydrothorax was obvious, probably of tuberculous origin. The latency of symptoms is surprising but not unprecedented. Bacilli were later found in the sputa.
   Prognosis: That of moderately severe phthisis, not incipient and not advanced.
   Treatment: Forced feeding, rest in the open air; later, moderate exercise.

A school-teacher, single, 24 years old, seen April 9. Family history unimportant. Never strong. Scarlet fever and measles in childhood. Brain fever at 9, pneumonia at 13, nervous prostration at 16, "congestion of the brain and spinal cord" at 19 from overwork at college. One year ago was laid up for two months by a "general breakdown." Last summer broke down with, she says, "every symptom of pulmonary tuberculosis." Catamenia irregular, five weeks to three or four months, appeared last ten days ago. Has taught night school in addition to her regular work since October, and since December has had a series of colds with cough and some expectoration. Has complained of general lassitude until the afternoon when she feels fairly well. Six weeks ago was called home to nurse her mother in her last illness, apoplexy. Returned ten days ago all used up. Two days later found that she was suddenly unable to distinguish letters in book she was reading. She rose to call for help and fell. Was conscious when found, but unable to assist herself. Had a series of convulsions during the night and was kept under ether by her attending physician. Since then she has felt tired and weak with constant headache, but has not been confined strictly to bed. No appetite. Bowels constipated. Her eyesight has returned. About half an hour ago she was found in the following condition:

A thin, delicate, half starved looking girl, apparently unconscious, lying flat on her back in bed, motionless, except for some tremor of the eyelids. She is so rigidly extended that with the hand beneath her neck she can be lifted like a log until she rests only on her heels. Her feet are extended to the utmost and the toes are strongly flexed. Her arms and hands are rigidly extended and held close to her sides, but can be bent by persistent pressure. When released they immediately resume their former position. The fingers are extended and adducted, the accoucheur's hand. The acetone odor of the breath can be detected several feet away. Loud calls, pinching, pricking with a pin, produce no response except an occasional flickering of the eyelids. When the hand is placed closely over her nose and mouth she struggles until freed. The condition of the pupils, which probably react to light, is made out with difficulty as the eyelids resist attempts to open them. The eyes are turned upward. Heart, lungs, and abdominal viscera seem normal. Temperature 99°. Pulse 110, soft, easily compressed. Respiration normal. Urine, 35 oz., normal color, acid, sp. gr. 1022. Albumen, very slight trace. Sugar absent. Ferric chloride test positive. Sediment contains a rare hyaline and finely granular cast. Hg. 90%. Whites 9000.

1. What guess can we make regarding the nature of her early illnesses? As a rule, phrases of this kind turn out to mean neurasthenia.
2. What is the general significance of an improvement of all symptoms in the afternoon? If symptoms are regularly worse in the afternoon, what should be suspected? Anæmic patients and neurasthenics are apt to be better in the latter part of the day. Patients who are worse in the afternoon often have fever (tuberculosis, malaria, typhoid), but simple fatigue may be the cause.
3. Significance of tremor of the eyelids? Its distinction from habit chorea and other facial spasms? Usually hysterical or neurotic. The motions are finer and more continuous than any other spasm.
4. Under what conditions is the ferric chloride test in the urine to be obtained? (*a*) Whenever carbohydrate food is not adequately utilized. This may be because it is not ingested or *not retained* (as in starvation, prolonged vomiting, or rectal alimentation), because it is *not absorbed* (diarrhœa, tuberculous peritonitis) or *not metabolized* (diabetes). In this case the semi-starvation readily explains the reaction. (*b*) In a few conditions the ferric chloride test cannot be so explained — *e.g.*, on a salt-free diet the reaction has been found to be strongly marked.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: With a negative physical examination (except for the urine which yields no information of diagnostic value) the diagnosis probably lies between the following alternatives: Epilepsy, hysteria, meningitis, autointoxication.

   Epilepsy is suggested by the history of convulsions; against it are all the facts of the present condition and most of those in the past history which point strongly to *hysteria*. Hysteria often follows upon just such a history of neuroses in youth, physical and psychical exhaustion, and mistaken treatment (etherization). The tendency to opisthotonos and tonic conditions of the extremities, the tremor of the lids and rolling up of eyeballs, the fact that she can be roused to purposeful action by appropriate stimuli (covering her mouth and nose) despite anæsthesia to a pin prick — all point strongly to hysteria.

   Meningitis may exist without temperature or leucocytosis (though it usually produces both), but cannot be diagnosed unless headache, retraction of the neck and eye symptoms (squint, ptosis, papillary or retinal changes) are present.

   Autointoxication is very possibly present in all hysteria, and in view of the starvation that is probably an element in this case it is not unlikely that the system is in some way poisoning itself, but such theories are not at present capable of clinical verification.

   Prognosis: She will probably never be quite like other people, but if the treatment is wise, patient, and prolonged, she may live a long, fairly useful and not unhappy life. Recurrence of symptoms is to be expected whenever she gets "run down" from any cause.

   Treatment: For the present, seclusion and forced feeding are the most important indications. A long rest with change of scene, occupation fitted to her needs, the personal influence of a wise friend or physician, are likely to help her very much. The problem is chiefly one of education, — physical, mental, and moral.

A factory overseer of 63 had long been subject to constipation, and for two years had had right inguinal hernia. Otherwise his previous history was excellent. On the day before his illness he had what he regarded as a satisfactory movement of the bowels. That night he ate heartily of clam-chowder and strawberries. The next afternoon he felt some abdominal discomfort. Later, while taking a bath, he found his hernia was down (as he had taken the truss off), and he found more difficulty than usual in replacing it. That night he vomited many times, the first vomitus suggesting strawberries, and had great abdominal pain, not localized. When seen next morning at 4 A.M., he was not collapsed. The tongue was moist, with a slight white coat. Temperature 98.4°, pulse 60, respiration 14. The abdomen was soft, not tender. The hernia was found to be perfectly reduced. Nothing abnormal was felt per anum. The pain required an injection of morphia, gr. $\frac{1}{2}$. Nausea was so troublesome that the patient refused even bits of ice. Nothing whatever passed the bowels. On the second day the vomiting became stercoraceous. On the third day the vomiting persisted. Temperature 98.5°, pulse 68. Large enemata ($5\frac{1}{2}$ quarts) had been given without apparent benefit. The belly was distended, rather hard, not tender. In the right side an ill-defined resistance was felt, corresponding to the ascending colon.

1. What cause can you suggest for the slow respiration in this case? Possibly he has already been given morphia. (Rehearse the common causes of slow breathing.)
2. How does the temperature record help us here? It tends to exclude peritonitis.
3. Causes of pyrexia and of subnormal temperature: (*a*) Infections with or without inflammation; (*b*) toxæmia (*e.g.*, in eclampsia); (*c*) disturbance of heat-regulation, as in sunstroke; (*d*) after use of atropine and in nervous excitement. Subnormal temperature is a measure of the degree of prostration from any exhausting or wasting disease (nephritis, cancer, heart disease, myxœdema).
4. Is the combination of clam chowder and strawberries a particularly indigestible mixture? What is its probable relation to this case? Not in a normal stomach. Probably no relation to this case. (Teacher may here give his views on indigestible combinations of food.)
5. Causes of stercoraceous vomiting? Intestinal obstruction and general peritonitis.
6. What can be inferred from the results of the enemata in this case? That the obstruction is above the signoid flexure.
7. Significance of the tongue in disease? in this case? A coated tongue has little diagnostic significance in general or in this case, since it is present in so many conditions of health and disease. A clean tongue with dyspeptic symptoms suggests hyperchlorhydria or extra-gastric disease.
8. Diagnosis? Prognosis? Treatment?
   Diagnosis: Intestinal obstruction is obviously present. Its cause might be

the hernia reduced "en bloc," but from the shortness of its stay outside the body this is unlikely. At this patient's age cancer is by far the commonest cause of obstruction. The acute onset of symptoms without previous constipation or other complaints is not surprising, for it is well known that cancerous stricture may suddenly "shut down" after existing for months without symptoms. The mass in the ascending colon is probably feces collected behind a cancer at the hepatic flexure.

Prognosis: Good for temporary relief after operation. Recurrence probable within eighteen months.

Treatment: Immediate surgical interference.

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J. S., aged 40 years, a merchant, was seen in consultation April 8 at 10 P.M.

He had suffered for years with indigestion, and had lost considerably in weight. For several months he had been treated by an eminent specialist in diseases of the stomach. His stomach had been washed out for three weeks. He had been on a liquid diet. He had made no improvement and for one week had remained in bed on account of an aggravation of epigastric pain. At one o'clock on the 8th of April he got out of bed and went to the back door to look out. While there he was seized with sudden severe pain in the abdomen. He vomited and crawled back to bed. His attending physician saw him at 3 P.M. He found his pulse 90, temperature 101°, abdomen of board-like rigidity, tender everywhere, but much more tender in the epigastrium. He did not show much shock. His physician administered $\frac{1}{4}$ grain of morphine and saw him again at 9 P.M. He was then somewhat improved, and his spasm was a little less. The consultant saw him at 11 P.M., and found him pale, sick-looking, with no peritoneal facies and no marked shock. There was distinct spasm and tenderness in the epigastrium, shading off into other regions of the abdomen, which was generally retracted. There was no dulness. The tongue was moist. Pulse 90, temperature 101.4°.

1. What is the significance of the peritoneal facies and why was it absent in this case? Vomiting, fear, or both, are the usual causes of the peritoneal facies, which is often seen in simple seasickness. The absence of "shock" or of recent vomiting explains the absence of this "peritoneal facies."
2. In what diseases is the use of the stomach tube contraindicated? When aneurism or gastric ulcer is suspected, or in very weak patients.
3. What further data might be of value in diagnosis here? Blood examination, urinary examination, color of conjunctivæ. (See also next question.)
4. How can we exclude plumbism? By careful questioning, examination of the gums, blood, and extensor muscles (wrist drop). Tabes dorsalis? By testing pupils and knee-jerks. Malaria? Search for parasites and enlarged spleen.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Lead, tabes, and malaria were excluded; laparotomy showed a perforated gastric ulcer (anterior gastric surface) walled off by fresh adhesions. Posterior gastro enterostomy was done. Three months later the patient had gained markedly in weight and was in excellent condition. Acute cholecystitis and acute pancreatitis were excluded positively only by the operation. The preceding gastric symptoms suggested the stomach as the source of the trouble, but are compatible with pancreatitis or gall-bladder trouble.

   Prognosis: The ultimate result in cases of this type we do not yet know.

   Treatment: Surgical interference was obviously indicated.

A paper hanger, 45 years old, is seen May 17. His history obtained from the attending physician, who made his first call May 3, was as follows: The patient uses alcohol in moderation, and has had no previous illness. April 27 he had a chill followed by sharp pain in the lower right chest, some cough with bloody expectoration, and shortness of breath. He has been in bed ever since. On May 3 the right chest was dull below the fourth rib in front and below mid-scapula behind, with broncho-vesicular respiration, increased voice and vocal fremitus. The cardiac apex was in the fifth space just outside the nipple line. No murmurs. The second pulmonic sound was accentuated. The temperature ran between 101° and 102.5° until the morning of May 8, when it fell to 99°. Since then it has been irregular, varying between 100° and 102°. The respirations were 35 until the 8th, when they fell to 28, where they have since remained. The pulse has varied between 100 and 110. Urine negative. The patient has lost strength and weight. The signs in the lungs have gradually changed; now the right chest seems fuller than the left and moves but little with respiration. It is flat throughout on percussion, with diminished vocal resonance and fremitus. Respiration is bronchial down to the fifth rib in front, growing gradually feebler below that point until it is lost toward the base. Feeble bronchial respiration is heard over the back, with numerous medium moist rales at the angle of scapula. The heart remains as before. The smooth edge of the liver is felt two inches below the costal margin. White cells, 28,000. A needle was introduced on the 14th in the eighth interspace in the posterior axillary line, and again to-day an inch or two farther back. It appeared to enter a solid body, and only a drop or two of blood was obtained.

1. In what diseases is bronchial breathing to be heard? Phthisis, pneumonia, some cases of pleural effusion, malignant disease, atelectasis.
2. Why is the pulmonic second sound accentuated here? Because of the obstruction to the pulmonary circulation due to the disease below described.
3. Is the eighth interspace a safe place to tap in a case like this? It is safe if the diaphragm is not pushed up. In hepatic abscess I have seen the liver punctured (through the diaphragm) by a needle introduced through the eighth space in the posterior axillary line.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Solidification of the whole lung, lasting eighteen days and proved by the result of puncture, might be due to tuberculosis, pneumonia (unresolved), or malignant disease. Loss of flesh and color is rare in unresolved pneumonia. Prominence of one chest is not produced by tuberculosis, and so high a leucocytosis, without evidences of cavities and purulent sputa, is almost unknown. Malignant disease was found at autopsy three months later.

   Prognosis: A few months of suffering. Treatment: Symptomatic.

A clergyman, 60 years old, gave the following account of his case. Since he began to preach he has been subject to insomnia, but it is under his control unless he is excited by mental labor, the effects of which are most marked when it occupies the evening. Eyes weak for forty years, but no worse of late. Though the voice is clear, its use in lecturing or preaching is at times, when he is debilitated, somewhat painful and requires much exertion. Appetite good, but two to three hours after eating he sometimes has a kind of epigastric pain or feeling of heat, not dependent on amount or character of food, unless it be worse when he eats little. Ice water seems to touch a raw spot. Bowels tend to constipation since early childhood. For many years has been troubled, especially when he is debilitated, by a sensation over the whole body as if pricked by innumerable needles.

Four years ago, while much exhausted by mental labor, went to a watering place, where he was put on low diet, reducing remedies, and frequent baths. At the end of four months, while at breakfast, was attacked with vertigo and began to talk with great volubility but incoherently. For three days, which were a blank to him, his condition excited much alarm, but at the end of that time his mind became clear and there has been no return of symptoms since. There was numbness of the hands and feet at time of the attack.

In the two last years has had five attacks of pain in upper abdomen, without known cause, very severe and accompanied by distention and general perspiration. One of these came on after conducting an examination four hours long, another after eating hastily. Otherwise no cause known. Pain generally began at 9 P.M., and lasted till midnight. No other symptoms noticed before, during, or after the attack of pain.

1. For what should one search especially in making a physical examination of this patient? The stigmata of hysteria, arterio-sclerosis, the signs of tabes or dementia paralytica (pupils, knee-jerks, speech-writing, mental condition).
2. What gastric anomaly do the digestive symptoms suggest? Hyperchlorhydria.
3. If his gastric symptoms had appeared for the first time within a year what diagnoses should be considered? Gastric cancer, gall-stones, duodenal ulcer.
4. Name the most important causes of paroxysmal epigastric pain. Peptic ulcer, gall-stones, plumbism, tabes, malaria, uræmia, and pancreatitis.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Since physical examination was negative and the patient was able to work hard despite his many symptoms, the diagnosis of neurasthenia was made; the improvement under treatment suited to that condition confirmed the diagnosis. The attack at the watering-place was apparently due to cerebral anæmia, the result of wrong treatment.

   Prognosis: Improvement should follow proper and patient treatment.

   Treatment: Small, frequent, low-proteid meals; recreation. No evening work.

A manufacturer, of 54, of good inheritance and habits, is seen in October, 1898. In childhood he was laid up for a time with what he thinks was rheumatism, and he has since had pains now and then, not laying him up, attributed by him to rheumatism. He has been a very active man and has ridden a wheel. Ten years ago he fell on the ice while skating, striking the back of his head. He was unconscious for a week, and in bed eleven weeks, but full recovery followed. For the past year he has been less well and strong. Last winter he went to Bermuda, gaining in every way and thirteen pounds in weight. Five weeks ago he drove a pair of pulling horses over forty miles. The next day he had severe pain in his arms, and this has since been his main complaint. The pain extends from the shoulders to the wrists, is worse at night, and often requires morphia to secure sleep. Pain and a burning sensation in the fingers comes on suddenly at times, waxes and wanes. He has kept the bed for about four weeks, sending for his doctor first three weeks ago. He has lost some flesh. The bowels are constipated. Of late there has been some general abdominal colicky pain not attributable to laxatives. Fever has been absent. There is no cough or præcordial pain; he lies indifferently on either side, with the head low. He is rather pale, with slight icteric hue of the conjunctivæ. The pulse is and has been regular, of fair strength and rather low tension, 96. The tongue is clear and moist, the gums and teeth in good condition.

Tactile sensibility is perfect. There is weakness in the arms and hands, especially in the extensor muscles. This weakness has increased notably in the past week. He can button his undershirt and pick up a pin from a smooth surface, though with difficulty. There is no distortion of the finger joints.

The cardiac impulse is in the fifth space one inch to the left of the mammary line. Percussion corresponds with palpation and shows slight extension of dulness on the right of the sternum. In both the mitral and aortic areas soft systolic murmurs are to be heard, one transmitted into the axilla, the other into the neck. The second sounds are clear, the pulmonic sound slightly accentuated. Visceral examination is otherwise negative. Œdema is absent. The knee-jerks are obtained, though with difficulty. The urine, 44 ounces in 24 hours, contains neither sugar nor albumen. The blood is normal.

1. What diseases are most often diagnosed as "rheumatism?" Osteomyelitis, neuritis, arthritis deformans, tabes, gall-stones, trichiniasis, tuberculous or syphilitic osteitis, aortic aneurism.

2. What connection can be traced between the fall and coma of ten years ago and the present symptoms? In all probability, there is no connection at all.
3. (*a*) Common causes of muscular weakness? (*b*) Of muscular paralysis? (*a*) Malnutrition (due to poverty, stomach or bowel trouble), diabetes, nephritis, anæmia, fevers, or cancer; psychic disturbances (muscular collapse from fright or sorrow; neurasthenia, hysteria). The beginning of the lesions mentioned next. (*b*) Neuritis (traumatic, toxic, infectious), apoplexy (usually producing hemiplegia), anterior poliomyelitis, birth palsies, dementia paralytica, myelitis (from pressure or unknown cause), hysteria.
4. (*a*) What information might be obtained by testing the power of the supinator longus here? (*b*) Describe the test. (*a*) Lead neuritis spares the supinator longus, while in traumatic neuritis of the arm the supinator is usually paralyzed. (*b*) Stand before the patient, who bends his arm at the elbow to a right angle. Grasp his hand and resist while he tries to draw his hand towards his shoulder. If the supinator is sound it will stand out obviously on the thumb-side of the arm.
5. What relations are there between joint troubles and diseases or anomalies of the nervous system? In tabes and syringomyelia painless but very destructive joint troubles may occur ("Charcot's Joint"). In many chronic joint troubles muscular atrophy is exceedingly rapid and the reflexes are increased.
6. What connection might exist between the cardiac and the peripheral symptoms? Anæmia or toxæmia might be the cause of both.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: Pain, muscular weakness (extensors), diminished knee-jerks, and colic with no anæsthesia or paræsthesia suggest neuritis — especially that due to lead. There are no signs suggesting involvement of the brain, cord, or muscles (myositis). The cardiac signs are those of a dilated heart, probably due to weakness of its muscle. An examination of the urine showed a large amount of lead, apparently derived from drinking water. The blood showed moderate secondary anæmia with an unusually large number of normoblasts and marked stippling.

   Prognosis: If the source of the lead can be found and the patient protected from it, the prognosis for ultimate recovery is good in a case that has progressed no further than this, but the cure will take at least a year.

   Treatment: Prevent the ingestion of any more lead. Help the elimination of the poison by giving KI gr. V. t.i.d. for three weeks in every four. Give iron and arsenic for the anæmia. Make the hygienic conditions as good as possible. Keep up the nutrition of the muscles by electricity and massage.

Mrs. J., 65, an active, spare, energetic woman. Always well. For two years has noticed some dyspnœa on exertion. Two weeks ago had an attack of dyspepsia with dizziness. This evening she ate a hearty supper of chopped codfish and potatoes warmed up in pork fat. Immediately afterwards she started out for a walk. After walking about a quarter of a mile she noticed dyspnœa, which rapidly increased to great distress. On reaching a friend's house she had barely strength to enter.

When seen twenty-five minutes later, the patient was sitting up propped by pillows. Respiration was from 30–40 times per minute, and accompanied by a loud rattle in the throat. The larynx moved violently up and down. No pain anywhere. The face was drawn and blue, nose pinched, hands and fingers purple, skin cold and clammy. The carotids were throbbing strongly, the heart beating tempestuously —140 times per minute. The lungs were full of coarse, medium, and fine rales up to the second rib on each side. Owing to the noisy breathing no definite information could be obtained regarding the cardiac valves.

1. Significance of the rattle in the throat? Tracheal rales occur whenever inflammatory or dropsical fluid accumulates in the trachea, owing to coma or to weakness which renders the patient unable to raise and expectorate or swallow the fluid. It is a bad sign, because it means either very deep (and therefore serious) coma, or very severe prostration.
2. Significance (*a*) of throbbing carotids; (*b*) of other cervical pulsations? (*a*) Throbbing carotids mean violent heart action, low arterial tension, or both. They are seen in cardiac hypertrophy from any cause, especially in aortic regurgitation, in nervous persons, and in marked anæmia. (*b*) Aneurism, a normal subclavian artery crossing a cervical rib, the normal (diastolic) undulation of cervical veins, and the systolic venous pulse of tricuspid leakage should be remembered.
3. What further data should be obtained at once? The strength and rhythm of the pulse (far more important than its rate), the temperature, the urine.
4. How is the prognosis influenced by the mode of onset here? Such symptoms arising without assignable cause are more serious than their appearance after (probable) indigestion and exertion as here.
5. Evidence against pneumonia here? The onset without chill or pain; the cardiac origin of symptoms; the absence of fever, and of signs of solidified lung.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: The lung signs are those of pulmonary œdema due to weak heart action, such as is often brought on by slight indigestion and exertion in an elderly person whose myocardium is weak. Bronchial asthma might produce similar pulmonary signs, but practically never occurs at the age of 65 in a person previously well. Renal asthma rarely has so sudden an onset without previous evidences of uræmia, dropsy, or cardiac weakness.

   Prognosis: Dubious. Death may occur within a few hours. She will probably get over this attack and succumb later to increasing heart weakness.

   Treatment: Absolute rest; vigorous subcutaneous cardiac stimulation (musk, strychnia, nitroglycerine); encouragement.

A middle-aged man was seen writhing in intense pain referred to the epigastrium. Vomiting of greenish fluid took place; there were loose discharges from the bowels, small in amount. This state of things lasted, with only short remissions, for two days, until a small dose of morphia (which, for special reasons had been hitherto withheld, though asked for) was administered, after which there was complete relief for many days. The pupils were dilated, the pulse regular and of normal character. Nothing special had been eaten or drunk to cause irritation of the stomach. The abdominal walls were neither distended nor retracted, no intra-abdominal tumor was detected, nor was there excessive tenderness on pressure. It was afterwards learned that he had had several such attacks, that for many months or years his legs had been weak, that he had had neuralgia and numbness in them.

1. What further examinations should be made? Pupillary reactions, knee-jerks, temperature, heart, lungs, blood, and urine are the most important.
2. If you had seen such a case for the first time, what treatment of the acute symptoms should you advise? Morphia subcutaneously.
3. Significance of the vomiting of greenish fluid? Violent or prolonged vomiting from any cause, *e.g.*, from seasickness, squeezes bile into the duodenum whence it regurgitates into the stomach and is vomited.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The epigastric pain is probably *not inflammatory* in origin (peritonitis), since there is no excessive tenderness or rigidity, and a small dose of morphia gives relief for many days. *Lead colic* is not often associated with diarrhœa, while the pulse usually shows increased tension. Evidences of plumbism and the possible sources of lead should be searched for. *Biliary colic* cannot be excluded without further evidence. A history of jaundice and of radiation of pain to right scapular region should be sought for.

   The weakness, pain, and numbness of the legs suggest either neuritis (perhaps due to lead) or tabes. Examination of the pupils showed no reaction to light, although the reaction to distance was normal. The knee-jerks were absent and Romberg's symptom present. The acute epigastric pain was explicable as a gastric crisis in tabes dorsalis. Morphia had been withheld because the patient had in previous years narrowly escaped the habit. No evidence of lead or of gall-stones could be obtained. Other causes of epigastric pain of less severity than that here described are *gastric ulcer* and *hyperchlorhydria* (in which the pain has more obvious relation to food than in this case), *malaria* (periodic pain with fever), gastro-enteritis, in which the shifting of the pain and its relation to food and to bowel movements are usually obvious.

   Prognosis: Most cases of tabes live many years and gradually get worse. Arrest is possible but rare; cure is impossible.

   Treatment: Potassic iodide and mercury should be given, though they are rarely of service. By re-education (Frænkel) the patient's muscles may be again brought under control to a remarkable extent after ataxia appears. Hot baths and analgesic drugs are used for the crises and pains.

A married woman, aged 27, is seen June 7. Both parents died of consumption. She has always been well except for an attack of rheumatic fever three years ago. Has had four healthy children, the youngest six months old. Her oldest child was taken with convulsions on the night of June 2 and died twelve hours later. After his death she seemed dazed and became delirious, but had intervals of apparent consciousness up to 6 P.M., when she complained of pain in the back of her neck and began to vomit. Vomiting was frequent and persistent until the following evening. She has remained unconscious since the evening of the 3d. Yesterday morning her hands and feet appeared swollen and inflamed. Her temperature has varied between 101° and 102.5° and has been irregular. Her pulse is 120, respirations 30. She is delirious, and does not appear to realize her surroundings. Both knee and ankles, the back of the left hand and the metacarpo-phalangeal joint of the right index finger are red, swollen, and tender. There is redness over both patellæ. The muscles of the calves and thighs are tender. The neck is somewhat stiff, the pupils dilated, and there is divergent strabismus. The knee-jerks are not obtained. Except for a few moist rales at the bases of the lungs physical examination otherwise negative. The white cells number 29,400. Urine, sp. gr. 1030, acid, albumen very slight trace, sugar a trace. Sediment contains occasional hyaline and fine granular casts and a rare abnormal blood globule. The amount is 500 c.c.

1. What changes might be revealed by ophthalmoscopic examination? Optic neuritis, choroid tubercles (very rare).
2. Discuss the urinary anomalies in this case? Passive congestion and the acute degeneration resulting from any infectious fever are the commonest causes of such urine. The glycosuria is probably due to cerebral irritation.
3. What are the most important types and causes of arthritis? (See above, Case 3.)
4. Name three causes of strabismus? Congenital, tuberculous meningitis, syphilis.
5. What tests would simplify the diagnosis? Spinal puncture, ophthalmoscopy.
6. How is the vomiting to be explained in this case? The onset of an infectious disease. Other causes of vomiting may here be discussed.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: At autopsy tuberculous meninigitis and general miliary tuberculosis were found. The family history, the sudden onset of fever, coma, delirium, retraction of the neck and strabismus, make this diagnosis obvious. The pains in the peripheral joints and muscles are to be explained as a part of the general infectious process, though in all probabilty no gross tuberculous lesions were present there. The type of meningitis would be revealed by spinal puncture.

   Prognosis: Probably early death. Recovery is practically impossible here.

   Treatment: To prevent bed-sores, maintain nutrition, and relieve headache (should it occur) by lumbar puncture and morphia, are the chief indications.

A painter, 23 years old. Family history negative. General health always good. Clap eight months ago, a slight mucopurulent discharge still persisting. Seven months ago had an attack of colic, lasting three or four days, similar to his present trouble, but less severe. Bowels move once daily without medicine. Seven days ago began to have cramps which have grown rapidly worse since and have been only partially relieved by large doses of morphia and atropine. The abdomen at first was generally tender, especially just to the right of the navel. The bowels have been constipated from the start, in spite of repeated doses of salts and enemata. Very little gas passes per rectum. Has vomited three times, the vomitus containing nothing of note.

Physical examination shows a poorly nourished man, suffering acutely from general colicky pains in abdomen. Expression pinched, anxious. No jaundice. Faint blue line on gums. Radial arteries slightly thickened. Heart and lungs normal. Abdomen distended, and tympanitic. Between the attacks of pain no marked tenderness is elicited even on fairly deep pressure. The distended, moving coils of intestine are visible through the thin walls, which are somewhat rigid everywhere. The finger high up in rectum strikes a tender point a little to the right of the median line. The pulse is small, 120, and has been steadily rising. The temperature, taken only during the past five days, has never gone above 99°. Urine scanty, high colored, acid, sp. gr. 1026. No sugar, no albumen. Sediment negative. Leucocytes five days ago 35,000, now 19,000.

1. Common causes of oliguria? Obstruction (prostatic, cancerous, or calculous), nephritis, infectious fevers, starvation (including pyloric obstruction with gastric dilatation), vomiting, diarrhœa, sweating, low proteid diet, hysteria.
2. How does the temperature record influence our diagnosis here? By itself it would incline us to believe that no inflammatory process is going on.
3. Significance of the leucocytosis here present? Uncomplicated plumbism never produces such a leucocytosis; intestinal obstruction rarely if ever raises the count to 35,000. A focus of inflammation is probably indicated.
4. Have the thickened radials any connection with the other symptoms of this case? Lead poisoning the patient certainly has. Lead is said to produce thickening of the arterial walls.
5. What organs and tissues are injured in plumbism? The gums, the blood, the nerves supplying the extensors, the brain, the arteries, the kidneys, the gastro-intestinal tract (colic, constipation).
6. Diagnosis? Prognosis? Treatment?
   Diagnosis: Operation showed general peritonitis due to appendicitis. The purgation probably did great harm. The obvious presence of plumbism led to a disastrous mistake in diagnosis.
   Prognosis: Very grave, in view of the absence of any evidence of localization.
   Treatment: Immediate surgical interference.

A lawyer, aged 68, has always worked hard, and for the past three years had great anxieties and no vacation. He had typhoid fever twenty years ago and obstinate sciatica two years ago, since which time he thinks he has lost weight. He smokes a good deal and drinks wine in moderation. He now complains of dyspepsia (without vomiting), constipation, dyspnœa, impaired vision, and pain in the right shoulder. For at least ten years he has looked pale. Now he looks very pale, and sallow. The tongue is clean, the pulse soft and regular. At the apex, which is in the fifth space in the nipple line, there is a faint systolic murmur, transmitted a short distance to the left. The pulmonic second sound is accented. No enlargement to the right. At the base of the lungs, posteriorly, moist rales are heard on full inspiration. The liver is not enlarged. There is moderate tenderness in the left epigastrium. On bimanual examination, a rounded mass can be felt, moving with respiration, about three inches below the right costal border.

The urine contains about $\frac{1}{10}$ per cent albumen and a few hyaline and granular casts, some of which display a little fat and crystals of uric acid. The total amount in twenty-four hours is one quart, with a specific gravity of 1015. The blood shows no leucocytosis. Red cells very much reduced in number. The painful shoulder presents no objective peculiarities.

1. Significance of rales? Rales mean fluid in the bronchioles. They are due to bronchitis ("simple" or tuberculous), asthma, pneumonia, atelectasis (inflammatory or dropsical), and œdema of the lung.
2. What further information about the rounded mass is desirable? Size, shape, surface, consistency, tenderness, dulness, relation to liver, relation to inflated stomach and colon, general mobility.
3. What other portions of the examination are insufficiently described? The blood, lungs, eyes, and urine.
4. How do you interpret the presence of uric acid crystals in the urine? They have no known significance unless massed to form calculi.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: The objective signs are an abdominal tumor, anæmia, and renal irritation. Cancer of the stomach or gut, chronic nephritis, and pernicious anæmia are the possibilities most deserving further study. The mass might be a distended gall-bladder. It showed, however, when palpated in a warm bath (discuss its use), all the characteristics of a displaced normal kidney. The blood showed 1,000,000 red cells, a low white count and high color index, with abundant megaloblasts. The aortic second sound was never accentuated and the urine never presented the full picture of any type of nephritis. The rales in the lungs were doubtless due to œdema; the heart murmur was "hæmic." Retinal examination showed hemorrhages. The diagnosis of pernicious anæmia was later confirmed at autopsy.

   For *Prognosis* and *Treatment*, see above, Case 4.

Man, 50 years old, a hard drinker, except during the past year. No family history obtained. For two or three years he has had pain after taking food, occasional vomiting and progressive loss of flesh and strength. For the past eight or ten weeks he has complained of frequent and severe pain of a "stretching" character in the right hypochondrium, without much tenderness there. For the last two weeks he has been deeply jaundiced. For a week he has been confined to bed and is emaciated and prostrated. His nights are disturbed by pain. The liver is greatly enlarged, hard, irregular, and nodulated, the lower edge reaching to the anterior spine of the ilium; it also extends to the left of the median line about two inches. It is slightly tender. There is little or no ascites. Pulse 92; temperature 98.5°. Urine rather scanty and very dark. No itching of skin.

1. What diseases can produce emaciation with jaundice? Gall-stones and their results, cancer obstructing the biliary passages, syphilis of the liver, cirrhosis, septicæmia (toxæmic jaundice).
2. Common causes of hepatic enlargement? Passive congestion, biliary obstruction from any cause, fat, cirrhosis, cancer, rickets; rarer causes are abscess, leucæmia and pseudoleucæmia, cholangiitis, amyloid, and hydatid disease.
3. What importance would there have been in a good family history? None in this case. (The diseases in which the family history *is* of value may here be emphasized.)
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Gastric symptoms, nodular hepatic enlargement with severe pain, emaciation and jaundice, and without evidence of portal stasis (ascites, etc.), point strongly to *cancer of the liver*, probably secondary to gastric cancer. The history of alcoholism and the hepatic enlargement suggest *cirrhosis*, but there is rarely if ever so much pain in cirrhosis (or indeed in any liver disease except cancer), and the "hobnails" of cirrhosis are not large enough to make the liver feel "irregular and nodular" through the abdominal wall. The absence of ascites is also against cirrhosis. *Syphilis* of the liver might produce all the signs described and can only be finally eliminated by the therapeutic test, but the amount of pain here present is almost unknown in syphilis and the amount of hepatic enlargement is very unusual.

   Prognosis: Hepatic cancer usually kills within a year of the discovery of its presence.

   Treatment: The relief of symptoms as they arise is all that can be hoped for if the diagnosis is correct, but in all cases of hepatic cancer KI should be given in doses of 10 to 30 grains daily until it is proved to be valueless. I have known a patient die of hepatic syphilis untreated, because her physician was sure that it was cancer and had given up hope. The same is true of cirrhosis. All cases should be given KI and the benefit of the doubt whether our diagnosis is correct. The itching which may torture the patient in such cases should be treated by alkaline baths or washes, dilute carbolic washes, or vaseline.

A tall boy of 19 is brought to the physician's office by his mother, who states that for ten years he has had trouble with his head and with his bladder. Usually he has to pass water every two hours in the daytime. This summer while he was in the country the intervals were longer, three or four hours, and his headache did not trouble him, but since the autumn the headache has returned. It is in various parts of the head, and goes and comes.

The urine is sometimes turbid, but never hurts him during micturition. Masturbation was rather frequent six years ago, but has not been practised since, he says. His father's sister and his father's aunt died of "softening of the brain," and his mother is anxious about his mental condition. Appetite, digestion, and sleep good. Bowels regular.

Examination shows a rather shame-faced, neurotic boy, very tall for his age. Visceral examination is negative. Blood normal. Urine 1026, slightly high colored, very acid, no shreds. No albumen, no sugar.

1. What are the bad effects of masturbation? In many cases there are no demonstrable ill-effects whatever. In a few cases the youth seems to be debilitated by it. That it ever produces brain disease is very unlikely. It is a symptom, not a cause of mental enfeeblement. In many boys a neurosis is produced by the shame and remorse associated with it and by fear of its terrible consequences as they are (quite falsely) delineated in quack newspaper advertisements or by friends and parents. This neurosis entails insomnia, anorexia, constipation, emaciation, and may thus bring about a pitiable condition.
2. Common causes of frequent micturition in youth? Nervousness (especially in girls), hyperacid urine, the irritation of a phimotic foreskin or of retained smegma, gonorrhœa, cystitis, diabetes (either type).
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: When a headache recurs in the autumn (when school begins) after disappearing in summer, eye-strain should be suspected and looked for. In this case it was found and under proper treatment greatly improved. Maternal anxiety doubtless contributed considerably to the boy's symptoms in this as in so many other cases, and by reassuring her a good effect was produced upon the boy. The urinary trouble seemed to be due to hyperacidity; at any rate it improved rapidly under the administration of sodic bicarbonate ʒ ss t.i.d. None of the other causes of frequent micturition mentioned above were found in this case.

   Eye-strain, hyperacid urine, and an overanxious mother were apparently the causes of his trouble.

   Prognosis: With removal of these hindrances to normal development the boy should rapidly regain his health. No doubt he has outgrown his strength and owing to this fact he will need some years to attain vigor.

   Treatment: The essentials have been mentioned already. Beside correcting his eye troubles, modifying the acidity of his urine, and reassuring his mother, one should encourage him to outdoor life, early hours, and nutritious food. No drugs seem indicated.

A lawyer of 47, of good family history, and previous health, had for many years complained of dyspepsia. He had been noticed to be losing flesh for three or four months and to have grown pale. Frequent headaches, weakness, and shortness of breath on exertion, have troubled him. An oculist whom he consulted referred him to his family physician, who found pallor, diminished eyesight, fulness of eyelids, increased pulsation in the neck, dyspnœa, and exaggerated heart action.

The apex was in the sixth interspace, mammary line. The heart-sounds were loud, and the valvular sounds at the base were accentuated; respiratory sounds at the base of the right chest behind were lessened, and numerous fine moist rales could be heard in lower portions and in the anterior margin of each lung. Abdomen negative. There was swelling of feet and ankles, and the patient stated that at times his hands seemed larger than usual. Urine 1011; pale. Albumen, a trace. Granular and hyaline casts, and fatty elements were found in considerable number. The patient also mentioned cough, with thin, frothy expectoration, and that of late micturition at night had annoyed him, and that the quantity of urine voided in twenty-four hours was increased.

Within three months there was gradual change for the worse, and after a day of considerable exposure he had a chill, severe headache and oliguria. He was found in bed unconscious, on the third day after the chill, and died on the following afternoon.

1. What was the condition in the lungs? Œdema of both; right hydrothorax.
2. Causes of diminished respiration below the right scapula? Effusion (inflammatory or dropsical), thickened pleura, solidification (pneumonic, tuberculous, cancerous), atelectasis, enlargement or upward displacement of the liver.
3. Causes of painless swelling of both hands? Nephritis, hot weather, trichiniasis, obstruction to the superior cava.
4. Significance of frequent nocturnal micturition? Prostatic obstruction, chronic nephritis, nervousness (in women).
5. (*a*) Causes for accentuation of the aortic second sound? Arterio-sclerosis, aneurism, high tension in the peripheral arteries (nephritis; excitement). (*b*) of the pulmonic second? Obstruction in the lungs due to mitral disease, pneumonia, any chronic lung trouble, pleurisy, and thoracic deformities.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: Autopsy showed chronic interstitial nephritis, cardiac hypertrophy and dilatation, general œdema. Death from uræmia. Retinal hemorrhages had been found by the oculist.

   Prognosis: After retinal hemorrhages are found patients seldom live a year. Otherwise the duration of life is difficult to predict. It depends on the patient's ability and willingness to undergo proper treatment, the response of his organs to such treatment, and the occurrence of complications.

   Treatment: Good hygiene with the avoidance of strain and worry; dry warm climate, such as Egypt; sweating and purgation each once or twice a week; restriction of liquids and replacement of table salt by sodium bromide.

A boy, 14 years old, of gouty family history, complains for a year of frontal headache, not very severe but persistent and wearing. Appetite excellent, but digestion not as good as it has been. Has grown suddenly very irritable, having been previously sweet-tempered. He has lost flesh during the year and seems listless and weak. Sleeps well. Bowels somewhat costive. Getting pale. Heart, lungs, and abdomen negative. Knee-jerks not easily obtained, but gait shows only weakness. Urine normal color, acid, 1028, no albumen. Sediment negative. Temperature 98°, pulse 96. No œdema. Blood negative.

1. What possible causes for the change in disposition? Masturbation, psychosis of puberty, brain tumor, diabetes.
2. Causes of frontal headache commonest at fourteen? Eye-strain, adenoids, frontal sinus disease, malaria, pubescence.
3. Significance of pallor both in general and in this case? Pallor may mean anæmia, but often does not. Deficient skin circulation, congenital or acquired (stokers, residents in the tropics), is a more frequent cause. Many consumptives and many neurasthenics are pale, but few are anæmic. Nausea and faintness produce local anæmia, and of course without blood change. No diagnosis of anæmia is justified until the physician has seen the color of a drop of blood on filter paper (Talquist scale) or on a handkerchief. In this case no anæmia was present.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The careful student of this case will notice first of all the *loss of flesh despite good appetite*. This, with the persistent headache and diminished knee-jerks, are the obvious physical signs. Eye-strain, adenoids, malaria, masturbation, were easily excluded by examination and watching. Further questions revealed the fact that micturition was frequent and copious. This, with the loss of flesh despite good appetite, suggested diabetes, and the urine was found on examination to contain sugar — (a point omitted in the examination of the attending physician and therefore omitted in the above description of the case). As the glycosuria proved persistent, the diagnosis of diabetes mellitus was made. No acetone or diacetic acid was found in the urine at this time. The sugar was 5%; urine, three quarts in twenty-four hours.

   Prognosis: In a thin boy of 14, a few years of life is all that can be expected. The response to diet, the presence or absence of acetone bodies in the urine, the weight-curve, are the important factors in prognosis. When weight is lost and glycosuria persists despite careful regulation of diet, the outlook is ominous. Whenever acetone bodies are present in the urine coma is threatened.

   Treatment: A diet of fat and proteid sufficient in calory value, and excluding at first all carbohydrates, is the indication. If this banishes sugar from the urine it should be persisted in for two or three weeks, provided no acetone appears and provided weight is maintained or increased. At the end of that time, if all goes well (or sooner if it doesn't), one or another carbohydrate (bread, oatmeal) in measured quantity should be given, noting the effect on the glycosuria, the acidity, and the weight. A small amount of milk and

fruit may be tried either before or after this if all goes well, and following the three indications above mentioned we cautiously experiment with different amounts of carbohydrate food — resting the sugar-burning function from time to time by a day of complete starvation (in bed with bouillon only) or a few weeks of fat-proteid diet. To increase fats (butter, cream, cheese, salad-oil, bacon) is as important as to exclude carbohydrates. No food — not even meat — is to be allowed in unlimited quantity. Saccharine replaces sugar as a sweet. If appetite fails, give fruit until it returns. Moderate exercise distinctly beneficial even in severe cases. In adults small quantities of alcohol may be used to increase the calory-value of the blood and help the digestion of fats. Drugs (except for constipation, insomnia, etc.) are valueless. In fat old patients all the above rules are to be applied in a modified form. A restriction of carbohydrates often suffices.

Young salesman, always well till present illness. Family history good. Worked hard last winter and worried. Frequent headaches, indigestion, insomnia. Feeling poorly for several weeks, especially at end of day, but has worked until week ago; since then, on sofa and in bed. Chief complaints, weakness and pain in left chest. Two chills this week; slight, dry cough; no nosebleed. Bowels constipated and appetite poor.

Physical examination: Fairly nourished, tongue coated, expression bright, no enlarged glands. Heart shows musical systolic murmur at apex, heard in axilla and back; action slightly irregular; no enlargement. Pulmonic second sound normal. Lungs negative, except over seat of pain in side, where was heard a harsh sound synchronous with respiration for a few breaths and then not heard again. Abdomen shows dulness in both flanks, which, however, shows but little shift with change of position. Liver dulness from sixth rib to rib-margin. The spleen is not palpable, splenic area tympanitic; knee-jerks lively. Temperature 99–102°, swinging up in the afternoon. Pulse 100–110. No sputa; urine negative.

Blood examination: Reds, 3,200,000; whites, 4000; Hb., 40%.

1. When a patient's chief complaint is weakness, what diagnoses should be considered? Anæmia, bad hygiene, typhoid, nephritis, endocarditis, myxœdema, tuberculosis.
2. Name five common causes of pain in the left axilla. Dyspepsia, pleurisy ("simple," pneumonic, tuberculous), intercostal neuralgia, muscular pain, hypertrophic spondylitis.
3. How should the cardiac murmur be interpreted in this case? Musical murmurs, widely transmitted, usually mean endocarditis (acute or chronic), but in the absence of any demonstrable cardiac enlargement or accentuation of the pulmonic second sound, the murmur may possibly be "functional." Suspend judgment.
4. What adventitious thoracic sounds are most likely to be fugitive, as in this case? Rales, especially musical rales, friction sounds, pleural or pericardial.
5. Significance of the leucocyte count in this case? It makes septic endocarditis or any other form of sepsis very unlikely.
6. General significance of normal or subnormal leucocyte counts? Their presence in typhoid and malaria makes them very valuable in cases where either of these diagnoses is being balanced against a possible pneumonia, meningitis, or septicæmia. Primary anæmias have normal or subnormal leucocyte counts; *some* secondary anæmias show leucocytosis. Most cases of abscess (appendix, liver, etc.) raise the leucocyte count. Most cases of cancer and uncomplicated tuberculosis do not.
7. Diagnosis? Prognosis? Treatment?
   Diagnosis: Continued fever with chills, anæmia, signs suggesting endocarditis and dry pleurisy, possibly fluid in the peritoneum, and a low leucocyte count

are the essentials of this case. Typhoid, malignant endocarditis (with or without a primary focus elsewhere), malaria and tuberculosis (pleural, peritoneal) are especially to be considered. The question of malaria can be settled by blood examination. Neither malaria nor typhoid will account for the physical signs in the chest or abdomen. The Widal reaction should be tried. Against septic endocarditis is the leucocyte count and the absence of embolic phenomena. Blood cultures should be made. In favor of tuberculosis are the physical signs (apparently) of dry pleurisy and of fluid in the belly (perhaps prevented by adhesions from shifting). This diagnosis was further supported by the negative blood cultures, the absence of a Widal reaction, and of malarial parasites. Operation showed it to be correct.

Prognosis: About one half the recognized cases recover in the course of many months, with or without operation.

Treatment: If, under treatment similar to that given in phthisis, the patient does not improve, surgical intervention is advisable and often proves curative. It should not, however, be advised in every case until the failure of hygienic measures is proven.

A broker of 26, moderately alcoholic, but with no venereal history. Has always been well. Been under a surgeon's care for last three days for "grippe" and taken whiskey and ammonol. On the third day, Saturday, he took two whiskies and went to ride. The horse shied and threw him. His head struck on a rock, just above and in front of the right parietal eminence. Coma for ten minutes; after being carried home he vomited and complained of pain in the occiput and numbness of the right hand. Temperature 104°, the pulse 90. Next morning it was 103°, next evening 103.8°. Monday it was 102°, pulse 85. The bowels have not moved. Patient has regained consciousness, but is still dazed. There is no evidence of fracture or suppuration anywhere, but there is numbness along the ulnar side of the right hand.

Seen Tuesday; very bright, sat up strongly in bed to shake hands. Laughed and talked, wants to get up, but temperature still 102°.

1. What are the objections to giving ammonol in this case? It is a nostrum.
2. What should you expect to find in this patient's urine? High color and specific gravity, small amount, albumen a trace, a few hyaline and granular casts.
3. What facts justify the statement: "There is no evidence of suppuration anywhere?" That the classical signs of inflammation (redness, heat, swelling, tenderness, and pain) are absent; that leucocytosis is absent.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The coma, the occipital pain later on, the vomiting and numbness along the ulnar side of the right hand, suggest intracranial trauma; but we note that the peripheral numbness is on the same side as the (supposed) brain injury. By *contrecoup* it is possible to injure the left side of the brain, but hardly possible to injure the cortical area corresponding to the small patch of peripheral anæsthesia. The absence of lasting coma, paralysis, or obvious injury to the skull make brain injury unlikely; but injury to the exposed ulnar nerve is natural in such an accident. Fever due to the "shaking up" of the accident would be unlikely to reach 102° four days after. "Grippe" should show local lesions (of the respiratory tract or elsewhere), and rarely causes a fever reaching 102° on the seventh day. This continued fever, without obvious local lesions, should naturally suggest (as it did here) a Widal test. This proved positive and the patient went through an attack of typhoid typical except for the absence of cerebral symptoms or marked prostration.

   Prognosis: The mortality is about 10%; the duration, four weeks fever, and six to twelve months before complete vigor is regained. After that the individual is often stronger than before the fever.

   Treatment: Bed, hydrotherapy, diet according to digestive power, enemata every second day when constipation is present. Those who believe that the heart can be stimulated in typhoid give alcohol, strychnia, and digitalis when the pulse becomes rapid, weak and irregular. If hemorrhage occur, food should be greatly restricted. Infusion of salt solution may be necessary. For perforation immediate laparotomy is usually advised.

Patient a man 55 years old; rather fat; subject to frequent attacks of winter cough, with asthmatic tendency. For seven years the heart had been noticeably weak and irregular. Pulse 80; first sound valvular. Apex beat an inch and a half directly below left nipple; no murmurs. No previous rheumatism. Several years ago there was sudden and complete loss of memory, the same questions being repeated as soon as answered. The expression was at the time rather vacant; the pupils were equal and responded to light; there was no motor paralysis. The amnesia lasted all day, disappearing the following morning. The pulse remained 50 for two days. The patient had been previously very anæmic, and had had much fatigue and anxiety, with digestive disturbance. The urine always remained normal. In the following years there were occasional attacks of transient numbness in the left arm and leg, and sometimes faint turns with pallor and irregular, feeble pusle. Headache was a frequent symptom; dyspnœa on exertion, impaired appetite, and insomnia were constant. There was no apparent loss of flesh. In 1897 life was endangered for two weeks by œdema of both lungs, supervening on an attack of bronchitis. In the subsequent years the condition improved somewhat, so that the patient could walk half a mile or more and was able to attend to considerable business. In autumn of 1904, he had several attacks of bronchitis, and, finally, an attack of complete hemiplegia resulted fatally in twenty-four hours without recovery of consciousness. Respiration was of the Cheyne-Stokes type, and later stertorous.

1. Significance of stertorous respiration? Any deep coma (even deep, healthy sleep) may produce it.
2. What is meant by an asthmatic tendency — *i.e.*, on what physical signs should such a diagnosis be based? Squeaking and groaning rales present on slight exertion or excitement, with or without typical asthmatic paroxysms at long intervals.
3. What are the relations of bronchitis and other pulmonary lesions to disease of the heart? (*a*) Chronic bronchitis may lead to emphysema, and this to hypertrophy, dilatation and weakening of the right ventricle with tricuspid leakage. (*b*) Mitral disease may favor the occurrence of bronchitis and pneumonia of various types. Intracardiac thrombosis, occurring in weakened conditions of the heart from valvular or myocardial disease, may result in pulmonary embolism. Septic or bland emboli are occasionally washed into the lungs from vegetations on the tricuspid valve. The rare lesions of the pulmonary valves involve malnutrition of the lungs and (in one case known to me) frequent attacks of pneumonia. Phthisis and endocarditis rarely coexist.
4. Diagnosis and Treatment?

   Diagnosis: The brain and heart seem to be the organs chiefly affected. In a man of 55, weak, irregular heart and pulse, with dyspnœa on exertion, but

without murmurs, are usually explained as results of coronary sclerosis and myocarditis. The "asthmatic tendency," obstructing the pulmonary circulation and so increasing the work of the right ventricle, probably contributed to weaken the heart. The acme of cardiac weakness caused the pulmonary œdema in 1897. The amnesia with bradycardia, the hemiparæsthesiæ and faint turns, and the terminal coma of hemiplegia, are results of cerebral arterio-sclerosis with final hemorrhage. No other diagnosis is plausible, provided the urine remained normal and provided syphilis can be excluded.

Treatment: The advance of arterio-sclerosis can perhaps be checked if life is lived at a slower pace, avoiding strains of all kinds and following strictly the laws of hygiene. Small doses of KI and of nitroglycerine are given by most good practitioners for long periods.

A. R., aged 50, was seen June 3. He had always been troubled with constipation, his bowels moving only once or twice a week. For five weeks he had had epigastric pain, which for three days had been severe. He had had no movement of the bowels, no chills or fever.

Physical examination showed a thin, worn-looking man. The pulse and temperature were normal, the tongue clean and moist. His chest showed diminished breathing throughout the left chest, broncho-vesicular respiration and dulness at the right apex, and numerous rales throughout this side. The abdomen was distended. There was dulness in the left hypochondrium, with marked tenderness and muscular spasm. Elsewhere there was tympany.

A high enema relieved him of large masses of scybalæ and made him more comfortable, but on June 10 there was still a tender mass in the left hypochondrium. Temperature 99.6°, pulse 90.

1. In what way and to what extent should the patient's age and the condition of his chest influence our decision as to an operation? The signs are strongly suggestive of phthisis; if this is confirmed by sputum examination, the risks of operation, especially in a man of 50, are considerable. Nevertheless, the risk of *not operating* may be greater.
2. What is a high enema? How and with what materials should it be given? A high enema is one which reaches above the rectum for a greater or smaller distance. It should be given with soft rubber tube passed up as high as it will go, with the patient on his left side and the hips raised. Warm suds preceded by warm oil may be used.
3. Importance of the temperature and pulse here? If they remain low and without leucocytosis, the danger of spreading peritonitis or of active abscess is not great.
4. What other data should be known? The condition of the sputa, blood, urine, arteries, and heart.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Phthisis was proved by the sputum examination. Dulness, tenderness, and muscular spasm in left hypochondrium unrelieved by high enemata, point to a localized peritonitis. This might be excited by ulcer or cancer of the stomach or colon, or by abscess of the spleen (very rare). The intestinal symptoms are not as marked as they are apt to be when ulcer or cancer of the colon have passed their long period of latency and make themselves felt. The stomach seems likely to be the source of the peritonitis, but further than this we cannot go. Ulcer is more apt to perforate than cancer, but cancer is commoner at this age. Operation showed a perforation of the anterior wall of the stomach near the cardia, with adhesions to the abdominal wall. No pus or general peritonitis.

   Prognosis: It is hard to see how such a case could recover without operation. With operation, the majority of such cases do recover, though little is yet known about the permanency of their relief.

   Treatment: The ulcer was infolded and a posterior gastro-enterostomy done. The patient lived six months and his death was due apparently to phthisis.

Mrs. A., a Jewess of 36, has been suffering for six months with pain in her left side. At the beginning of the period a small lump appeared in the left breast. It was pronounced cancer by a competent surgeon and immediate removal was advised, but in three days it had completely disappeared and has not been seen since. From that time to the present she has had pain of gradually increasing severity throughout the left side of her body and in the back of the head. When the attacks of pain come she feels flushed but looks pale (sometimes with red spots on the face), and has "electric feelings" in the chest which are somewhat relieved (as is the pain) by pressure with the hand.

The pain is most apt to come on at night and sometimes keeps her awake or checks speech. There is a constant sense of pressure at the root of the nose and a beating in the head.

Her appetite is poor and there is often "bloating" after meals. The bowels are costive and she is nervous.

In the past three months, since a vacation in the country, with a good deal of exercise, she has decidedly improved, and now has the pain not more than an hour or two a day. The day after a good night sweat (which she has occasionally) she feels much better. She thinks she has lost about six pounds in weight.

Physical examination (including blood and urine) is negative.

Diagnosis: The dictum of the competent surgeon had impressed itself with such force upon the mind of this neurotic Jewess that she could not rid herself of the idea of cancer, somewhere, internal if not external. The wide area over which pain is felt (head, chest, leg), the vaso-motor symptoms and paræsthesiæ, the relief by vacation in the country with relatively good hygiene, and the improvement after sweating, all point to a *fear-neurosis* as the chief cause of her symptoms. No doubt the constipation and dyspepsia play a considerable part in her sufferings. Of course the negative results of physical examination are most important as confirmatory evidence of the neurotic basis of the symptoms.

Prognosis: No complete cure is often accomplished in a neurotic Jew, but considerable improvement should result from effective reassurance and good hygiene. Life and useful activity should not in any case be considerably curtailed.

Treatment: After a thorough examination one should do one's best effectively and convincingly to reassure the patient. This will probably take many sittings but can probably be accomplished, and is the *sine qua non* of any considerable relief. In this case it gave great relief. The digestive symptoms should next receive attention, and taking a hint from the relief in the previous summer vacation we should try to secure something like the same conditions. Massage, hydrotherapy, and proper exercise, with fresh air, regular nutritious meals, and encouragement, will help much. Enemata may be needed for the bowels from time to time.

A manufacturer, 35 years old, is seen May 28. His father and sister died of phthisis, otherwise the family history is negative. While never strong he has been able successfully to attend to a large and exacting business. Three years ago he suffered from æstivo-autumnal malaria. Since then he has been treated several times for malaria. Last December he began to feel run down, but kept at work until the latter part of March, when he went South to recuperate and remained there two weeks. His appetite and strength improved, but on his return, April 8, after an elaborate dinner, he complained of nausea and flatulency and felt feverish. He went to bed where he has since remained. He has vomited occasionally, and has had a half dozen loose movements a day, nearly black in color, probably the result of bismuth which he has taken frequently. During the last three days he has noticed a slight dry cough. The temperature chart shows a wave-like curve. Every nine or ten days the morning temperature is normal, where it remains for from one to four days. It then gradually rises for four or five days to 102° or 103°, and as gradually falls. The evening record follows the morning curve closely, but has rarely gone below 100°. The temperature is always higher at night, and often during the periods of morning apyrexia rises as high as 103°. He has lost greatly in strength and flesh.

Physical examination shows a man much emaciated and weak, Sensorium free. Both cheeks are slightly flushed. There is dulness over the left front down to the third rib and in the left supra-spinous region, with broncho-vesicular respiration, increased voice sounds, and numerous high-pitched, moist rales at the end of inspiration. The heart sounds are normal. The hard smooth edge of the spleen is felt two inches below the ribs. Liver is normal. Abdomen is distended, tympanitic, somewhat tender everywhere, but especially in right iliac fossa. Pulse 112, weak and thready. Respiration 24. Leucocytes 12,000. Widal is positive in dilution 1–60, but not higher. Blood culture shows no growth. Examination of the stools showed bacillus of tuberculosis, B. typhosus, B. colicommunis, streptococcus pyogenes, staphylococcus pyogenes albus. Urine 1018, acid, slight trace of albumen, a few hyaline and fine granular casts, amount 60 oz.

1. How can the lung signs be explained in view of the fact that there has been but three days' cough and no sputa? Acute phthisis may produce no cough or sputa; the same is true of pneumonia, but the picture is more like phthisis.
2. Would further tests help the diagnosis? No; the data given are sufficient.
3. How do you interpret the Widal reaction in this case? As evidence of typhoid.
4. Diagnosis? Prognosis? Treatment?
   Diagnosis: Tuberculosis and typhoid are proved by the data in the stools.
   Prognosis: Hopeless. Treatment: Symptomatic.

A married lady of 57, with a grown family of healthy children, began about three years ago to suffer from general headaches, during which she could understand and answer questions, though memory of what was asked and replied was lost. These headaches recurred irregularly, each attack lasting twenty-four hours or more. Two years ago her physician suspected myxœdema, and great improvement in all respects followed the taking of thyroid. The dosage was diminished and for some months back she has taken only two or three grains a day.

About one month ago headache, more constant and less severe than formerly, came on, and she failed in general health and strength without any definite symptoms other than the headache. Six days ago she began to get stupid and within twenty-four hours was in deep coma, in which she still remains. There is incontinence of urine. The bowels have not moved for several days. Two days ago the pulse, respiration, and temperature were all normal at 6 A.M. Between that hour and 9 A.M. the pulse rose to 110, respiration to 30, and temperature to 103°, remaining elevated ever since. Soon after the advent of coma the thyroid extract was increased to 15 grains three times a day. Until within twenty-four hours she has taken food fairly well. Pulse 130, regular, respiration 36, temperature 102.8°. Lies on back with flaccid, non-sensitive limbs; sides of face equal; pupils equal, moderately contracted, responding slightly to strong light stimulus; all other reflexes absent, except the plantar. The eye fundus is negative. Visceral examination is negative, except for dulness, bronchial respiration, and fine rales over the right lower back. The leucocytes are 23,000 per cu. mm.

1. What is the condition of the right lung? Pneumonia, probably of the hypostatic type.
2. If Babinski's reaction were present on one side, would your diagnosis be modified? (See question 4.)
3. Significance of the mode of onset in this case? A gradual onset of coma is against cerebral hemorrhage or embolism.
4. What can be inferred from the absence of focal symptoms? That there are probably no lesions in the motor areas. The whole brain is probably affected to some extent.
5. Diagnosis? Prognosis? Treatment?
   Diagnosis: Cerebral tumor or abscess is possible, but the absence of focal symptoms, and especially of choked disk, are against these diagnoses. Uræmia could explain all the symptoms, but the urine showed no characteristic changes.* The thyroid treatment could not by itself produce such symptoms. The fever and leucocytosis make it needful to consider meningitis, but the

* No mention of the urine was made in the account of the case given by the attending physician; hence it is omitted in the history printed above.

gradual onset and the absence of choked disk and of cranial nerve symptoms are against it. Kernig's sign is apparently absent (flaccid limbs); in meningitis it is usually present. Cerebral arterio-sclerosis, with or without syphilis and with or without definite foci of softening, seemed on the whole most likely.

Autopsy showed a "worm-eaten" and greatly thickened cranium, with two foci of softening, narrowed cerebral arteries and amyloid spleen and kidneys. Hypostatic pneumonia on the right.

Prognosis: Cases presenting similar symptoms have recovered under vigorous antisyphilitic treatment (subcutaneously).

Treatment: Iodine and mercury subcutaneously should be tried, though the mercury is unlikely to have any effect.

The patient is a married woman, age 34, large and fat in person. She has had two children and three miscarriages, the last six weeks ago. Otherwise she says her health has always been good, until within three or four months; has been in the habit of drinking beer freely, but has not been intemperate. For two weeks there has been pronounced jaundice, anorexia and bilious vomiting soon after eating; dizziness, flatulence, occasional diarrhœa with pain at epigastrium; slight œdema of feet and ankles. These symptoms have been increasing. There has been no headache and no hemorrhages or chills.

The tongue was clean, the pulse 80, temperature 97.8°. The heart and lungs were normal. The liver was much enlarged and smooth. The spleen was felt below the ribs. There was no ascites. The urine had a sp. gr. of 1017, was of a deep yellow color, and contained a trace of albumen and much bile; sediment normal. The blood was negative.

1. What forms of jaundice need not be considered in this case? The toxæmic forms can be excluded. This leaves cancer (probably of the pancreas), catarrhal jaundice, syphilis, cirrhosis.
2. What can we infer from the smoothness of the liver surface? That cancer of the liver is very unlikely to be present. Cirrhotic elevations and depressions are not often palpable through the belly wall. Syphilis often causes great deformities of the liver.
3. In what types of hepatic enlargement is pain a prominent symptom? Chiefly in passive congestion and in cancer. (Gall-stones may produce much pain, but do not often produce demonstrable hepatic enlargement.) In abscess there is no pain until the pus has burrowed up close to the surface so as to stretch the capsule where lie practically all the nerves of the liver. Cirrhosis is rarely painful, syphilis often painless.
4. What are the significant points in the past history? The miscarriage (which suggests syphilis), the alcoholism (which suggests cirrhosis), the build (which suggests gall-stones).
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Gall-stone in the common duct is possible but unlikely, owing to the presence of splenic tumor, the lack of any intermission in the symptoms and the absence of pain, fever, or chills. Catarrhal jaundice cannot be excluded, though it rarely leads to much enlargement of the liver or spleen. The points against cancer are the absence of pain, cachexia, or irregularities on the liver surface. Syphilis might produce all these symptoms and can be positively excluded only by the therapeutic test. Cirrhosis, or the combination of cirrhosis and fatty infiltration, is the most likely diagnosis. This accounts better than any other hypothesis for the splenic enlargement, the large, smooth liver and the jaundice. The gastric symptoms would then result from passive congestion of the stomach. The course of the case confirmed the diagnosis of cirrhosis.

   Prognosis: One or two years of life.

   Treatment: KI until it is shown to be useless, tapping if ascites appears, possibly Talma's operation.

Mrs. M., 30 years old, is seen in consultation October 10, 1905. She had her first baby five months ago, and following delivery a severe albuminuria (¼–½%) without any urinary abnormality in amount, specific gravity, or color. The attending physician found very scanty hyaline casts otherwise nothing pathological in the sediment. With rest in bed and exclusive milk diet the urine became normal in the course of five weeks, but after a return to ordinary diet albumen reappeared and she was again on milk diet for period of seven weeks. In neither of these attacks was there any œdema or any uræmic manifestation.

While convalescent from this trouble (but after solid food had been begun) the patient began eight days ago to have bleeding from the gums, from the rectum and subcutaneously. The spots under the skin were of various sizes, perhaps twenty in all, and occurred mostly on the arms and legs. The bleeding ceased in two days; it was not accompanied by subjective symptoms of any kind, and the patient feels now quite well though rather weak. She is still in bed.

She looks the picture of health. Her color is bright, there is no emaciation. There is a loud, harsh, systolic murmur audible all over the præcordia, but best heard in the third left interspace near the sternum. The pulmonic second sound is slightly louder than the aortic. The heart is not enlarged. The other viscera show nothing abnormal. The gums are entirely normal, as they have been throughout. A few "black and blue" spots still remain upon the extremities. The urine is 2½ pints in twenty-four hours. Sp. gr. 1030, no albumen, no sugar.

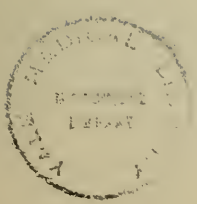
Blood: red cells 3,552,000, white cells 8000. Hemoglobin 55%. The stained film shows achromia and moderate poikilocytosis, but is otherwise normal. The temperature ranges between 97° and 99.4°. Twice in the last fortnight it has reached 100°.

1. Causes of albuminuria? Passive congestion of the kidney, infectious fevers, the "irritation" of bile or sugar in the urine, nephritis, renal arterio-sclerosis, hæmaturia and pyuria from any cause, the intermixture of vaginal discharges. In many cases (orthostatic, adolescent) no cause can be found.
2. Causes of subcutaneous hemorrhage? Traumatism, infections (such as meningitis, typhus, sepsis, and the exanthemata), toxic, cachectic, scurvy, arthritic purpura, unknown causes ("simple" purpura, purpura hemorrhagica).
3. Causes of anæmia such as is here described? Hemorrhage, malaria, typhoid (rarely), malignant disease, dysentery, chronic suppurations, nephritis, cirrhosis, chlorosis, intestinal parasites.
4. Diagnosis? Prognosis? Treatment?

Diagnosis: Puerperal nephritis and the long ensuing milk diet accounts for the anæmia. The heart murmur has the characteristics of a "hæmic" or "functional" affair. The purpura is probably of the "simple" type, *i.e.*, it is not severe or dependent on any known cause. The fever is easily accounted for by the anæmia and confinement to bed. The harshness of the cardiac murmur might suggest fears that septic endocarditis was present and responsible for the fever and hemorrhages, but the position of the murmur, the absence of chills, leucocytosis, or marked pyrexia make this fear groundless.

Prognosis: The patient should be up and about in a day or two, and well within a month (as in fact she was).

Treatment: Nutritious food, sun and fresh air, iron.



Dentist, 42 years old, always well until within four days, when, after a hard day's work, was taken with a chill, vomiting, and epigastric pain. Temperature 102°. Next day, 99.4°, but vomiting continued and was so exhausting that a morphia subcut. ¼ gr. was given. Pain not so severe as the night before, but considerable epigastric tenderness. Kept his bed. Temperature 101.4° in afternoon.

On the third day, the one previous to that on which I saw him, the vomiting was less persistent and temperature a little lower, but he felt very weak and faint, wanted no light or sound in his room, and desired to be left alone and not disturbed. Slight tenderness over the whole abdomen now developed, with perhaps a little more on the right iliac region. Bowels have been moved freely by cathartics each day. To-day, feels as if there was a mass in the rectum. Urine very scanty in the last three days. It was examined a week ago and found normal. There has been no œdema. Has been working very hard of late.

Examination: Tongue clean; temperature 99.2° at 5 P.M.; pulse 68, good strength. The patient is pale, and looks exhausted and in pain. Thorax negative. Slight general abdominal tenderness, not localized, but slightly greater in the epigastrium. Rectal examination negative.

1. What is the significance of the mass apparently felt in the rectum? Any rectal irritation may give the feeling as if a mass were present.
2. Why is the urine so scanty? Presumably because of the persistent catharsis.
3. What further tests should be made? Leucocyte count, urine examination.
4. Diagnosis? Prognosis? Treatment?

Diagnosis: Has he or has he not a localized peritonitis — perhaps from appendicitis? In favor of peritonitis is the initial temperature and the suggestion of localized tenderness on the third day. Against it are the absence of localized tenderness or elevated pulse upon the fourth day, the free movements of the bowels, the mental condition, and (to some extent) the temperature. The presence or absence of leucocytosis would help to decide the question. It is conceivable that a nephritis and uræmia may have declared itself within the week since the urine was last examined. The photophobia suggests meningitis or hysteria, but there are no other data confirming these hints. Previous to obtaining a leucocyte count and urinary examination acute indigestion, aggravated by cathartics and by fear of appendicitis, seemed the most probable diagnosis. Leucocytes and urine proved normal and the diagnosis just mentioned became still more probable. The course of the case confirmed it.

Prognosis: He should be well and at work within a week. The malady is trifling.

Treatment: To convince one's self and then the patient that he has no appendicitis or other serious disease, to stop the cathartics and soothe the rectum with an enema of thin cooked starch, to get the patient out of bed and gradually increase his diet, are the main indications. Nux and gentian will probably help him, also advice about hygiene.

A boy of 14, a new inmate of a reform school, is seized February 18, 1903, with headache, backache, and fever. His appetite became poor but he managed to go to his meals that day. Next day a red papular rash appeared scattered over the entire body. On the third day some of the lesions began to be pustular, and when he was seen by the writer on the fourth day the great majority were distinctly pustular and had a hard, shotty feel under the skin. Some were drying up and covered with dark red crusts. The fever was continued, ranging between 100° and 102°. The boy felt decidedly sick, and could take only liquids without nausea. Slight headache and general muscular soreness persisted.

The rash was nowhere confluent, and the skin between the lesions was normal. The internal viscera were apparently normal, as was the blood. The urine showed the characteristics usual in fevers.

It was subsequently learned that he had taken some cough medicine for the ten days ending one week before the present illness began. The nature of this medicine could not be learned. There were no other cases like this in the reform school.

1. Commonest causes of generalized pustular eruptions? Acne and furunculosis, drug poisoning, chicken-pox, small-pox. Less common are pustular eczema and impetigo contagiosa.
2. Diagnosis? Prognosis? Treatment?

   Diagnosis: The presence of fever and constitutional symptoms makes all of the above affections unlikely, except varicella and variola. Acne and furunculosis do not appear so rapidly, and this is equally true of the eczema and impetigo. Our diagnosis practically is between varicella and variola. The constitutional signs (pain, fever, and digestive disturbance) and the shotty feel of the lesions point rather to variola. Decidedly, and on the whole definitively, against variola is the rapidity with which the lesions reached and passed their maturity. It is almost unheard of that any part of a small-pox eruption should have passed through the pustular stage and be drying up by the fourth day. The diagnosis of exanthematous infection will never be satisfactory as long as it has to rest on the characteristics of the exanthemata, but we have at present no more reliable clinical test.

   The fact that there were no other cases in the school was of no importance in diagnosis, for the boy had but recently entered it. Drug eruptions are always to be remembered in such cases, but it seems very unlikely that any such eruption could produce so much pain, fever, and digestive disturbance.

   Prognosis: Varicella in a young boy usually gets well within seven to ten days. Nephritis and local gangrene are rare complications.

   Treatment: Isolation from adults is important, since in adults the disease may be severe. Liquid diet during the fever is usually advisable — otherwise no treatment is necessary.

A woman, apparently about 40, seen at hotel at 6 P.M., unconscious. Semi-dilated pupils, equal and responding to very strong light stimulus. The face is pale; pulse 90, regular, small, and soft. Respiration is shallow, with an occasional deep inspiration. Temperature normal. No blood or froth on lips; no odor to breath. No disparity between sides of face. Limbs flaccid, but firm supraorbital pressure causes motion in one or another extremity, so also firm pinching of leg muscles. No reflexes, deep or superficial; no œdema; no glands. Old, white, irregular scars seen near root of nose, on forehead and right cheek. Physical examination of thorax and abdomen negative. Urine by catheter, 1017, acid, no albumen, no sugar.

In the absence of all friends, the housekeeper states that the patient and her husband came there from a neighboring town the evening before. The husband was awakened in the night by some noise to find his wife unconscious. Later, she vomited, but she has had no convulsion as far as known, either now or previously.

1. Important causes of coma? Apoplexy (including cerebral hemorrhage, thrombosis and embolism), uræmia and hepatic toxæmia, diabetes, cerebral concussion and compression, syncope (fainting), poisoning by opium, alcohol, and illuminating gas, sunstroke, epilepsy (after the seizure), hysteria.
2. What strong evidence have we against opium poisoning in this case? The effects of opium kill or wear off within eight hours. This attack has lasted already about eighteen hours.
3. What can be inferred from the abolition of reflexes? Any deep coma may abolish the reflexes, hence we can infer, from this fact only that the coma is deep.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Uræmia, diabetes, and hepatic toxæmia are excluded by the examination of the urine, abdomen, and breath; syncope, alcohol, and opium by the duration of the symptoms; sunstroke, concussion, epilepsy, compression, and gas-poisoning by the history of the case. The reflexes are never wholly absent, but rather increased in hysteria, which is also unlikely because of the general muscular flaccidity. Apoplexy (in the wide sense above defined) is apparently the diagnosis. The white scars on the forehead suggest injuries from a fall in epilepsy, also healed syphilitic lesions. The former explanation is ruled out by the history; the latter gives a very natural reason for the coma and for the lack of focal symptoms, which in apoplexy of syphilitic origin are often absent.

   Prognosis: The majority of such cases recover from the attack within a few days or weeks, especially if vigorous antisyphilitic treatment is carried out.

   Treatment: Iodine and mercury should be given subcutaneously as long as the patient cannot swallow, later by mouth. Careful nursing is essential to prevent bed-sores.

The patient is a man of 35, who has had fever and cough for two weeks. At the onset he had much pain in the front and right side of chest, near attachment of diaphragm. Had a chill on two successive days and on the fourth day. No dyspnœa; no sputa till sixth day, when a scanty, mucopurulent spit began and has steadily increased in amount and grown more purulent since. The fever has ranged from 101° to 104°, and at times there has been a good deal of sweating and slight delirium. Has taken liquids fairly well. Bowels are rather loose, as they have been off and on for several years. No pain anywhere now.

The man is sallow, dull, and listless; tongue clean. Poorly nourished. Over lower half of right chest marked dulness, with distant bronchial respiration and increased whisper; voice sounds nasal, especially near angle of scapula. Fremitus nearly absent. Over upper half of lung medium moist rales were heard on the first and third days and none on the second. Viscera otherwise negative, except slight tenderness and fulness in the abdomen.

Sputa examined twice for bacilli; none found.

Urine high colored, acid 1027, trace of albumen, no sugar.

Sediment: Abundant urates, leucocytes, and squamous cells. Few hyaline and coarse granular casts.

Blood: Red 4,200,000; white 26,000; Hg. 43%.

1. What points are against the diagnosis of typhoid fever (with complications) here? Typhoid even with lung complications usually runs its course without leucocytosis. Splenic tumor and rose spots are apparently absent. The Widal reaction should be tried. If it is absent, typhoid is unlikely.
2. Significance of nasal voice sounds? This is "egophony" and occurs oftenest in pleural effusion, — sometimes in solidification of the lung from any cause.
3. What further examination is essential in this case? Puncture of the chest.
4. Comment on the urinary sediment. In most fevers one sees such sediment; it has no diagnostic value.
5. Common causes of leucocytosis? Infections, local or general, due to cocci (strepto-, staphylo-, pneumo-, gono-, meningococci) scarlet fever and diphtheria, violent muscular exertion, some toxæmias, *e.g.* uræmia and gas-poisoning, and any acute organic brain lesion.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: Phthisis, unresolved pnuemonia, abscess of the lung, empyema, or subdiaphragmatic abscess rupturing into the lung, are the diagnoses most deserving consideration. The two negative sputum examinations make phthisis unlikely, but do not exclude it. Unresolved pneumonia does not produce profuse purulent sputa. The signs and symptoms of the other three lesions above mentioned are identical. Abscess of the lung is rare, and a definite cause (such as the inhaling of food or foul material) is usually to be found. The same is true of subdiaphragmatic abscess. Empyema not

uncommonly breaks through the lung. Hence statistical grounds should incline us towards this diagnosis. Exploratory puncture is the next and most important means of clearing up the diagnosis.

Prognosis: Pneumococcus empyema. well drained, usually gets well in a few months.

Treatment: (*a*) Puncture: this was done and showed pus containing pneumococci; (*b*) Encision of a rib; free drainage. Recovery under treatment which was otherwise hygienic and symptomatic.

A young man of 21 is seen January 10. At the age of twelve he had very severe scarlet fever, followed by endocarditis, for the results of which he was under medical care for about three years. Of recent years his health has been very good and he has ridden the wheel fast and far without inconvenience. Rather more than two months ago he went to the doctor's office with a "cold"; temperature normal. A few days later he returned with a temperature of 103°, and said he had had night sweats. He was sent home, sat about the house for two days and then took to his bed, which he has not left since. A four-hourly chart has been kept for sixty-two days, and shows a continuous fever, ranging from 101 to 104, usually higher in the afternoon. On the seventh and tenth days after taking to his bed he had nosebleed. This he had occasionally when well. Cough has been a fairly constant though not prominent symptom, and twice has led to vomiting. The bowels have been regular with the aid of an occasional enema. Delirium has been practically absent. Early in his illness there were a few doubtful rose spots. The spleen has never been palpable. He has once or twice complained of some pain in his shoulders, but has had no other articular symptoms.

The pulse was about 90 at first, regular, of good strength. It has lately become irregular and rapid, some of the heart-beats not reaching the wrist. Under digitalis, brandy, and strychnia, the pulse has improved very much and is now regular, 100. Ever since he took to his bed he has been on an exclusive milk diet. The urine is sufficient in quantity with a large trace of albumen, granular and hyaline casts, specific gravity 1015.

The patient is pale, lies on his back, is not much emaciated, has a clear tongue, and complains only of weakness.

On physical examination the lungs seem clear. The heart's impulse is in the fifth space, half an inch to the left of the nipple. A systolic murmur is heard with maximum intensity over the impulse, transmitted into the axilla. Inside the left nipple is a doubtful presystolic murmur. The pulmonic second sound is accentuated, aortic second sound clear. The belly is slightly distended, duller at the flanks than in the centre, the dulness and resonance shifting somewhat with change of position. The blood shows a moderate leucocytosis and no Widal reaction.

1. In what diseases do night sweats occur? Those producing fever, prostration, or both: phthisis, syphilis, rheumatism, pneumonia, and typhoid (especially in convalescence), septicæmia in all forms, alcoholism, neurasthenia, and others.
2. Significance of the cough in this case? The common causes of cough are (*a*) irritations of the upper air passages; (*b*) any disease of the lungs; and (*c*) any

disease of the heart that produces pulmonary stasis. In this case there are no evidences of (*a*) or of (*b*). Hence we fall back on (*c*) pulmonary stasis due to the heart lesion above described.

3. How is your diagnosis affected by the third (short) paragraph printed above? Doctors sometimes conclude from such evidence that no serious disease is present. This conclusion, however, is quite unjustifiable when the physical signs belie it. Hence the importance of accurate and thorough physical examination.
4. Name three common fevers which may run for weeks without touching normal? Typhoid, tuberculosis, septicæmia (with or without septic endocarditis).
5. What further valuable evidence might be obtained from the blood? Blood cultures should be made.
6. Why is the specific gravity of the urine so low? Exclusive and profuse milk diet.
7. If the spleen had become palpable, how should the diagnosis have been modified? Not at all, since all the diseases to be considered here may produce splenic enlargement.
8. What further symptoms might appear which would clinch the diagnosis? Evidence of embolism, commonest in the spleen and kidney, rarer in brain, extremities, or subcutaneous tissues.
9. Diagnosis? Prognosis? Treatment?

   Diagnosis: Typhoid after sixty-two days of fever is almost sure to show a Widal reaction and no leucocytosis. Tuberculosis of this duration should show more evidence of cerebral, pulmonary, or other local lesions. Pure tuberculous peritonitis would produce the abdominal signs here described, but rarely if ever produces such fever and would not account for the cardiac signs. Septicæmia with septic endocarditis will account for all the facts of the case. The ascites was apparently due (like the cough) to heart weakness. The acute mitral endocarditis was proved at autopsy to be engrafted (as the previous history suggests) upon an old process of like nature. Multiple embolic infarctions of the spleen and kidney were present.

   Prognosis: Recovery has certainly occurred in cases of septic endocarditis,* and in the milder forms of this disease is probably not at all uncommon. Even in cases as severe as this it is possible but not likely. In any event the course is likely to be many months.

   Treatment: If blood cultures reveal a pathogenic organism, an appropriate antibacterial serum should be tried. Otherwise the treatment is purely supportive and symptomatic.

* See Herrick: "Transactions of the Association of American Physicians, 1902"; page 468.

A heavy middle-aged woman "took cold" on Saturday and was afterward distressed for breath. She was seen on Tuesday evening sitting up, breathing with some difficulty and with a wheeze, chiefly with expiration. The face was red but not livid. She complained of pain at the top of the sternum and side of the throat. There was expectoration of white frothy mucus and some tough brown masses. The voice was suppressed. The tonsils were not swollen, there was no exudation in the pharynx, and the epiglottis was not swollen. The pulse was rapid. The physical signs were negative with the exception of prolonged expiration. Temperature 99.9°.

1. (*a*) What are the commonest causes of pain referred to the sternum? (*b*) of sore throat? (*a*) Tracheitis, asthma, weakened or embarrassed heart, aneurism, mediastinal tumors. (*b*) Pharyngitis, tonsillitis, tonsillar abscess.
2. In what diseases do patients wheeze? Asthma, emphysema, some cases of bronchitis, bronchial or tracheal stenosis from cicatrix (syphilis), or from pressure (aneurism or tumor).
3. Significance of inspiratory and of expiratory dyspnœa? *Inspiratory* dyspnœa means obstruction in the upper air passages ("croup," diphtheria, quinsy, post-pharyngeal abscess, foreign bodies in the larynx. *Expiratory* dyspnœa is seen chiefly in asthma and emphysema. Mixed forms occur in other diseases of the lungs and of the heart.
4. How might blood examination help in the diagnosis of this case? The absence of leucocytosis would help to exclude pneumonia.
5. What should you expect to find in the sputum? Nothing of any diagnostic significance. (Important sputum findings in other cases may here be discussed.)
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: Laryngeal diphtheria, acute laryngitis with tracheitis and asthma, Ludwig's angina, aneurism, and "central" pneumonia are the most important possibilities. The temperature and the absence of any physical signs on the fourth day make pneumonia very unlikely. (This opinion was later confirmed by the finding of a normal leucocyte count, — a fact which helped to exclude diphtheria and deep cervical abscess.) Ludwig's angina produces tenderness and swelling (as well as pain) at the side of the neck and throat. Fever and leucocytosis would be high. Laryngeal diphtheria was excluded by laryngoscopic examination, which also demonstrated the presence of acute laryngitis and tracheitis. The piping rales of asthma appeared a few hours later (they are often very fugitive), and this, with the negative results of urinary examination, confirmed the diagnosis of bronchial asthma. The tough brown masses appeared to come from the region of the tracheal bifurcation.

   Prognosis: She should be well within a week. Such attacks often recur but are never serious.

   Treatment: Hot steam (with or without tincture of benzoin) inhaled every few hours from a large pitcher of hot water will give some relief. Heroin, gr. $\frac{1}{12}$ every five hours, will help the cough. Bed and a diet according to her digestive power are the only further treatment needed.

A rather nervous gentleman, 43 years old, both of whose parents died of cancer, moved from the city to the country about a year before his present illness began, and became quite active out doors, with benefit to his appetite and general health. The winter snows, however, forced him to be more sedentary. When first seen in consultation with the family physician, who had been called only four days before, he complained of obstinate constipation. For six weeks he had had darting pains in the lower abdomen, worse at night, but relieved by walking. The physician had first prescribed a laxative pill, which caused pain but no dejection. The next night he sat bending forward in pain most of the night, getting relief from an hypodermic of one quarter grain of morphia, twice repeated, which was followed by a fecal discharge. The bowels were soft, except for resistance corresponding to the ascending and transverse colon. The next night he had an ounce each of glycerine and castor oil, but was worse the following day. Some flatus escaped on the day of the consultation, but no fecal matter had come away for at least four days. The temperature had remained normal. There was no vomiting.

Physical examination showed a spare man, with an anxious face. Rectal examination was negative. The abdomen was distended with gas and somewhat tense, but nowhere especially tender. When the patient's attention was diverted, the resistance already described could be felt. The pulse was not remarkable at first, but after the examination it became rapid and feeble, improving again after a little brandy.

1. What special significance has the effect of the morphia in this case? When morphia produces a fecal movement it does so by relieving spasm. Such spasm is apt to occur above a stricture (cancerous or other) of the gut.
2. What can be inferred from the rectal examination here? That there is no obstruction within reach of the examiner's finger.
3. How do you interpret the absence of vomiting? The obstruction is not complete (gas passes) and is probably low down in the large gut.
4. Why were his pains relieved by walking? The element of spasm above mentioned may have been helped by walking, as any form of constipation may be.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Gradually increasing constipation, leading finally to complete stoppage of fecal movements, with abdominal distention, pain, and a pulse that easily becomes rapid and feeble, all point to intestinal obstruction, apparently in the region of the splenic flexure of the colon, behind which feces are accumulated. At his age, and in the absence of any history of previous peritonitis or laparotomy, cancer of the bowel is the commonest cause.

   Prognosis: Grave; operation may relieve, but early recurrence is the rule.

   Treatment: Immediate laparotomy, artificial anus; later an attempt to extirpate the growth.

A business man of 26, of good family history, habits, and previous health, is seen in November, 1900. In the latter part of July, after golf, which he plays with the left hand down, he suffered during part of the night from severe pain throughout the left arm. A month later he had a similar attack, not following golf, and the pain then recurred nightly after 1 A.M. During the daytime the pain was only occasional. About eight weeks ago he began to have "indigestion"—*i.e.*, a sensation as if food was arrested on its way to the stomach, which, apparently, managed it well enough after its arrival. About two weeks later a dry, harassing cough came on, troubling him most when on his back or right side, but also excited by taking food. Soon after this he noticed that the veins in his neck swelled up when he stooped over, and he had to have his head higher at night. Lately he has had severe night sweats. Pain, especially in his left arm, dysphagia, and dry cough are now the most prominent symptoms. There has been some loss of weight, more of strength.

He is pale, nervous, and excited. The pulse and respiration are normal in the erect position. Lying down causes marked dyspnœa. Toward the root of the neck on the left side discreet, non-tender lumps can be felt, without attachment to or reddening of the skin. Percussion is dull over the upper sternum, without prominence or pulsation. The radials are synchronous and equal in volume; the pupils are equal; there is no tracheal tug. Thoracic and abdominal exploration is otherwise negative. So also the urine. The axillary and inguinal glands are not enlarged. Hæmoglobin 70 %; reds 4½ million; whites 22,300.

1. What is the significance of pain which is worse at night? Congestive pain, such as that of toothache, of certain headaches and of syphilitic periostitis, is increased by a position that brings more blood to the part. Any relatively mild pain is felt more severely at night because of the absence of distraction.
2. What temperature should you expect in this case? Slight, irregular fever.
3. What importance has the age of this patient? Cancer and aneurism are unlikely at twenty-six.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Pain in the left arm, dysphagia, dyspnœa, dry cough, lumps in the neck, dulness behind the sternum, marked increase of leucocytes, are the important data here, and all suggest aneurism or mediastinal tumor. Aneurism is rare at 26 years and does not produce leucocytosis or lumps in the neck. Hodgkins disease and leucæmia are identical but for the blood. In this case the blood showed lymphocytes 65.2%, polynuclears 34% eosinophiles and myelocytes each 4%. Lymphatic leucæmia is accordingly the diagnosis.

   Prognosis: Cases with fever usually run a short course — six months or less.

   Treatment: X-ray exposures may diminish the size of glands and possibly prolong life. Daily exposure of five to ten minutes over the sternum and neck with a hard tube should be continued until there is the faintest suggestion of burn. Then the spleen and long bones may be exposed.

A woman of 35, married ten years, five children. Has had considerable womb trouble and been treated for it by local physician. Of late, it has been less troublesome. Father died of cancer, mother of "a decline." For a year has had much to worry her, and has been running down and getting nervous. Is troubled with sour eructations after meals, especially in the morning. Bowels rather costive. Appetite as good as usual. Lost no flesh. Occasional severe headache, frontal and occipital. Sleeps poorly. "Hot flushes" frequent. For the last day or two (since coming to Boston) has been vomiting a good deal of greenish stuff.

When seen, was drawn and pinched in the face and nauseated. Complained of general abdominal pain, but no tenderness could be found, and physical examination was negative except a sharply accented aortic second sound. At times she was quite hysterical, after which she passed a large amount of pale urine. Very nervous, restless, and alarmed about herself. No fever; pulse 110. Complained at times of headache. Knee-jerks lively; no clonus. Uterus retroflexed and bound down with adhesions.

Diagnosis: Increasing nervousness and debility for a year, headaches, dyspepsia, and vomiting, might all be explained as the common portion of hysterical women at this age. The association of headache and vomiting ("sick headache") suggests migraine, and the condition of the uterus might be thought of as helping, together with dyspepsia and constipation, to explain these headaches. Such was in fact the diagnosis made in this case, and thereby a serious mistake was made. The woman died in three days of uræmia. The urine by some accident was not examined, but even without that the sharply accented aortic second sound should, at her age, have suggested nephritis. At autopsy secondary contracted kidneys were found.

In this case the hysterical symptoms so impressed themselves on us, that we neglected a thorough search for organic disease. It is important to remember that the combination of headache and vomiting may mean *either* a common "sick headache" *or* a dangerous uræmia. Organic brain disease, tumor, abscess, meningitis, are also possible, but there were no focal symptoms or choked disk in this case. The high tension pulse, sharp aortic second, and abundant pale urine pointed straight to the diagnosis, had we not been blind to it.* The uterine condition in this, as in many other cases, produced no symptoms and had nothing to do with the case. Much harm is often done by treating such lesions as disease, instead of letting them alone.

Prognosis: In such a case, by vigorous depletion (including perhaps venesection) uræmia may perhaps be staved off for weeks or even months.

Treatment: Bleeding and saline transfusion should be tried at once. Next day purgation with concentrated magnesic sulphate, followed on the day after by a sweat bath. Whichever method produces the best results should be repeated from time to time. It often works well to sweat and purge on alternate days. Milk diet for a few days is best.

* See also Case 71.

A washerwoman, 68 years old, generally healthy, has been feeling poorly for a month and losing appetite. A week ago began to have pain in abdomen; at first all over, but later settling in the lower left corner. It is worse when she walks, but has not kept her awake until last night. She has always been constipated, and the bowels have not moved for two days; has eaten little for two days.

Examination: Emaciated, sallow, tongue coated, breath offensive. Temporal arteries stiff and tortuous. Heart dulness reaches to the right sternal border and up to the second rib. Apex just below the fifth rib in the nipple line. At the ensiform cartilage, a short murmur replacing the second heart sound and heard less distinctly elsewhere. First sound at the apex very short; heart's action somewhat irregular. Few moist rales at bases of both lungs, with slight dulness and diminished breathing over lower half of left back; voice sounds normal, tactile fremitus diminished. Abdomen slightly distended; tender in left iliac fossa, where a deep resistance is felt, but no tumor. Liver dulness from seventh rib to rib margin. Right kidney palpable. Urine normal color; acid, 1017; trace of albumen; no sugar. Sediment: pus, squamous, and spindle cells, calcic oxalate and mucus. Knee-jerks not obtained. Temperature, 102° at entrance to the hospital, normal next day. Pulse 100. An enema brought away a small movement, very dark in color.

1. What is the significance of tortuous temporal arteries? Nothing, unless they are also rough and hard. All temporal arteries are tortuous.
2. How do you interpret the dimensions of the heart in this case? They are normal.
3. How do you explain the murmur? If the pulse is collapsing the murmur is probably due to aortic regurgitation.
4. How does the significance of arhythmia in aortic regurgitation differ from its significance in mitral stenosis? It is much more serious in aortic disease. Mitral arhythmia is consistent with years of fair health.
5. Name three common causes of cardiac arhythmia? Myocardial weakness, mitral disease, tobacco.
6. What sort of pulse should you expect in this case? A collapsing pulse.
7. How much can be inferred from the pulmonary signs here described? Œdema of the lungs with right hydrothorax.
8. How do you explain the area of liver dulness here given? Senile emphysema.
9. What does the calcic oxalate mean here? Nothing,—as is usually the case.
10. How is the temperature accounted for? The fatigue and emotion strain of entering the hospital.
11. Diagnosis? Prognosis? Treatment?

    Diagnosis: A high enema brought away an enormous amount of feces with great relief to all symptoms. Fecal impaction and arterio-sclerosis seemed to account for all the facts in her case. Sigmoid cancer was excluded by the course of the case.

    Prognosis and Treatment: By regular enemata the recurrence of impaction can probably be prevented.

A banker, 58 years old, of good family and previous history, of good habits except for very rapid eating, is seen May 1st. About a year ago his remaining teeth, which were few and inefficient, were extracted. False teeth were procured, but he has not been able to wear them on account of sore mouth, apparently subjective rather than objective. His wife states that for at least a year he has not been as vigorous as formerly. He says that during the summer his sleep was poor, without apparent cause. In June he took a vacation, but returned weaker than when he went, complaining of poor appetite and digestion, nausea and occasional vomiting. The vomitus was not characteristic. He did not gain in the summer and his complexion became sallow. November 15th, after drinking moderately of cider, diarrhœa came on; and between this date and February he lost fifty-one pounds in weight. Soon after this the diarrhœa was checked, and since the last of February loss in weight has been trifling, though his color and strength have continued to fail. His digestion is better, and he takes a fair amount of food. His main complaint at present is of weakness, lassitude, and shortness of breath on slight exertion. No fever has been noted. Several examinations of the urine have been made, all negative until a week ago when a single specimen showed sp. gr. 1008, albumen $\frac{1}{10}\%$, some pus—not enough, it was thought, to count for the albumen—and a few hyaline casts. The twenty-four hour amount is not known, but is believed by the attending physician to be increased. Pulse 84, regular, feeble, and of low tension. Temperature 99.6°. Marked pallor of skin and mucous membranes, with a yellowish tinge. Soft systolic murmurs are heard in the mitral and pulmonic areas; the heart is not enlarged. There is slight œdema of the ankles. Visceral examination is otherwise negative.

1. What chronic diseases are most prone to appear at 58? Cancer, arterio-sclerosis and its results.
2. What seems to account for the diarrhœa? (See diagnosis.)
3. What is the significance of a urine of low specific gravity? Profuse ingestion of fluid, nervousness, chronic intestitial nephritis, diabetes insipidus.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Yellowish pallor, weakness, and dyspnœa, with no obvious disease of the heart or lungs, suggest grave anæmia. The urinary abnormalities are too recent to account for the symptoms. Gastro-intestinal symptoms such as are described often occur in anæmia. The cider had probably no effect. Blood examination revealed typical pernicious anæmia.

   Prognosis and Treatment. (See above, Case 4.)

A merchant, aged 35, is seen March 30. Has never been very rugged. Last summer had a cough which persisted until he went to the mountains. Lately has felt rather better than usual. On the evening of March 28 attended an elaborate dinner. Shortly after returning home, he had a chill and began to vomit, lobster and mushrooms being noted in the vomitus. On the morning of the 29th he complained of nausea and violent headache. Temperature 101°, pulse 96. Toward noon he began to grow stupid and within an hour could not be roused. The respiration became rhythmical with occasional intervals of apnœa lasting twenty-five seconds. The pulse also was rhythmical, varying from 38 to 108 as extreme limits, the lower rate corresponding to the periods of apnœa. On the morning of the 30th he had regained consciousness but was still dull. Headache much better. Temperature normal, pulse and respiration showed a hardly noticeable rhythm. Vomiting had not occurred since eleven o'clock the preceding day. He remained dull, but could be roused to take interest in his surroundings. Is constantly tossing about the bed. At five o'clock in the afternoon, his physician noticed that he was absolutely deaf. Examination of ears negative. He replied intelligently but slowly to written questions, but appeared to have some difficulty in seeing them. For the past twenty-four hours he has required catheterization. Temperature 98°, pulse 72, respiration 24.

Physical examination shows a pale but fairly well nourished man. Pupils contracted and unresponsive to light. Head moves freely except forward, in which direction motion seems slightly restricted. Examination of chest and abdomen negative except for a slight systolic murmur over the pulmonic area. Knee-jerks lively, but equal. No Babinski, no ankle clonus. Patient apparently has full control of all his muscles. White cells 16,000. Urine high-colored, sp. gr. 1024, acid, very slight trace of albumen, few hyaline and fine granular casts, no sugar. Amount in past twenty-four hours, 32 oz.

1. What is the significance of rhythmic changes in pulse and respiration? Cheyne-Stokes breathing.
2. How do you explain the cough of the previous summer? It may have been due to tuberculosis or simply to bronchitis.
3. What was the use of asking him to answer written questions? To test his cerebration.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Ptomaine poisoning, uræmia, and meningitis should be considered. The first two do not stiffen the neck or produce deafness. The urine is not characteristic of any type of nephritis. The blood and urine are consistent with any of the diagnoses considered. In favor of meningitis are the pre-

dominance of cerebral symptoms (coma, Cheyne-Stokes breathing, deafness, stiffened neck, headache) in a febrile disease of acute onset. Death occurred in three days and epidemic meningitis was found at autopsy.

Prognosis: About 75% die within ten days. Deafness and blindness may result if recovery occurs.

Treatment: Wholly symptomatic and supportive.

A married lady of 62 is seen March 1. The family and previous histories are good. Three years ago the left breast was removed by a competent surgeon for cancer. Since then her health has been good until December 15, 1902, when, for failing eyesight, she consulted an oculist, who found detachment of the retina in the left eye.

About January 1, she noticed that she was short of breath. After this she kept very quiet as exertion brought on dyspnœa. Dyspnœa has continued her main complaint, brought on by exertion, but, especially of late, often waking her from sleep. About two weeks ago she could lie on the right better than on the left side; since then there has been orthopnœa. She has a slight dry cough, no pain, fever, or vomiting. Bowels regular. The appetite is poor. Loss of weight has not been marked. The pulse is 112, regular. The right chest is dull on percussion above, flat below, with feeble respiration, diminished voice sounds, and fremitus. There is puerile breathing over the left lung, and a few fine rales in the fifth interspace in front. The heart's impulse is in the sixth space, anterior axillary line. The sounds are clear. The abdomen is negative; the urine, 1016–1018 in specific gravity, contains neither albumen nor sugar; the amount is not known, but thought to be nōrmal for one in her condition. There is no œdema.

1. Name the most important causes of dyspnœa. Cardiac weakness, emphysema, pleural effusion, pneumonia.
2. (*a*) Significance of orthopnœa? (*b*) In what diseases does it most often occur? (*a*) Orthopnœa means dyspnœa so great that lying down causes distress. (*b*) It is oftenest seen in the diseases mentioned above.
3. Causes of displacement of the apex impulse? Cardiac hypertrophy or dilatation, pressure of pleural effusion or of subdiaphragmatic tumors, contraction of a diseased lung with pleural and pericardial adhesions, *situs inversus*.
4. At what age is pleural effusion most common? Under 40.
5. Why does she prefer to lie upon the right side? Because that frees the left lung for breathing, the right being embarrassed by hydrothorax.
6. What symptoms are likely to develop later in the course of this case? Pain, œdema of the right arm and of the adjacent parts.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: Evidence of pleural effusion coming on in an elderly woman whose breast has been removed for cancer suggests at once a cancerous metastasis at the root of the lung. A simple pleuritic effusion might develop at this age, but is rare. Hydrothorax is ruled out by the absence of notable cardiac weakness. Paracentesis will probably decide the diagnosis by revealing a heavy bloody fluid such as is common only in cancerous effusions.

   Prognosis: The outlook is hopeless and life cannot be prolonged many months.

   Treatment: Temporary relief can be given by tapping the chest whenever dyspnœa becomes urgent. Otherwise the treatment is wholly symptomatic.

A shoemaker of 24, who has previously been well, has noted for six months, gradually increasing weakness of the legs. He dates the trouble from a fall from a horse car six months before, when he struck violently upon his knees and fell several times more on his way home. Kept at work till three months ago, when he took a three weeks' vacation and improved considerably; but, on returning, found himself unable to work more than half a day.

Two months ago the hands and arms began to get weak and numb, and now he can't button his collar. The hands feel rather better when he stirs about and uses them. For the past week has felt as if something were tied tightly about his waist. In other respects he feels perfectly well. He has never used alcohol and denies venereal disease.

Examination: Pupils equal and react normally. Soft systolic murmur at the apex, transmitted two inches to the left. Pulmonic second decidedly louder than aortic. No evidences of cardiac enlargement. Chest and belly otherwise negative. Deep tenderness over calves, thighs, and buttocks. Knee-jerks absent, muscular power feeble, sensation perfect, moderate general atrophy. Faradic irritability of the muscles impaired in both arms and legs. Galvanic irritability normal. At times the tips of the fingers sweat profusely.

When seen his temperature was 99.8°, pulse 120, respiration 24.

1. What can be inferred from the mode of onset here? The fall was not the cause but only the first manifestation of his trouble.
2. What can be inferred from the atrophy? It indicates neuritis, not tabes.
3. Causes and types of atrophy? Disuse, neuritis, progressive muscular atrophy, chronic joint disease, poliomyelitis anterior, amyotrophic lateral sclerosis.
4. Causes of muscular tenderness? Neuritis, myositis (*e.g.*, trichiniasis), œdema, or inflammation of neighboring tissues.
5. What other types of tenderness are there? Cutaneous hyperæsthesia, serous membrane hyperæsthesia (as in appendicitis and other abdominal lesions), bone tenderness, as in periostitis, nerve tenderness, as in neuritis.
6. What do (*a*) the electrical reactions in this case teach? (*b*) the sweating fingers? (*a*) typical action of degeneration is absent. (*b*) vasomotor changes.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: Muscular weakness and tenderness with absent knee-jerks, atrophy, and partial reaction of degeneration, all suggest neuritis. In tabes, there is no tenderness and muscular power is good. In progressive muscular atrophy the knee-jerk is not lost so early and sensory symptoms are usually absent. The slight fever points towards neuritis, likewise the vasomotor symptoms. The cause of the neuritis cannot be guessed from the data before us.

   Prognosis: Recovery will probably be complete if the cause of the neuritis is removed, but it will be slow and will take many months.

   Treatment: Nourish the muscles and the skin by massage, hydrotherapy and electricity. The patient should do such work as he can painlessly. If any cause for the neuritis can be found (lead, arsenic), it should be removed.

A married lady, childless, 55 years old, of good family history, is seen in February, 1900. She passed the menopause without difficulty, and several years ago had cystitis, with good recovery. During the winter of 1899 she travelled in North Africa, going to Germany toward spring. There her appetite became capricious and she suffered occasionally from slight nausea, without vomiting. She then had an attack of "grippe," which much impaired her strength. In the early summer she returned home, when her appetite and digestion improved much and her strength returned in great measure, though her friends remarked that she was distinctly paler than formerly. She considered herself well enough until five months ago, when she began to suffer from sciatica, at first and more severely in the right side, but later also in the left. About a month later her appetite failed again and more or less constant nausea came on, with occasional vomiting, the latter without relief or definite relation to either the time of taking food or its quality. Then came on very troublesome salivation, leading her constantly to spit up a clear, somewhat frothy fluid, which is sometimes poured out in such quantity as to run from her mouth. This persists to the present time. The sciatic pain now has practically disappeared. She has kept her bed for some weeks, losing flesh (though she is still stout), but sleeping well. Of late there has been slight bleeding from the gums, but no other hemorrhage has been noted.

Pulse 96, regular, soft; temperature 99, above which point it is said not to have risen. Except for marked pallor, physical examination is negative. The urine is negative and contains no arsenic. Several examinations of the gastric contents show neither free HCl nor lactic acid.

An examination of blood slides shows: Red cells 3,000,000 or thereabouts; white 15,000; Hg. relatively low.

Reds: Rouleaux well formed, deformities slight, no polychromatophilia, average diameter normal, one normoblast.

Whites: Polymorphonuclear 80%; lymphocytes 20%; eosinophiles 0%.

1. What types of anæmia are oftenest seen at 55? Pernicious anæmia, and that secondary to cancer, metrorrhagia or other hemorrhage.
2. What diseases are oftenest diagnosed (wrongly) as "Grippe"? Tuberculosis, febrile gastro-enteritis, tonsillitis and pharyngitis, bronchitis, and many infections not yet named.
3. Significance of the absence of free HCl in the gastric contents? It may be temporarily absent in many conditions and often without any known cause. Permanent absence of HCl is commonest in diabetes, gastric catarrh and other chronic dyspepsias, gastric cancer, and pernicious anæmia.

4. What further information about the stomach is needed here? Its size and motor power.
5. Diagnosis? Prognosis? Treatment?

Diagnosis: The cause of the marked anæmia here present should be looked for in one of the following diseases: Intestinal parasites, myxœdema, malignant disease, pernicious anæmia. Myxœdema is suggested only by the salivation and can be ruled out by the therapeutic test. The stools should be searched for eggs of intestinal parasites. Careful pelvic and abdominal examination should be made under ether or in a warm bath in search for a focus for malignant disease. The blood is not typical of pernicious anæmia, but is consistent with that disease in a period of remission. Diagnosis is impossible from the data here given. [Later in the case evidences of gastric cancer appeared.]

Prognosis: The outlook is almost hopeless, though early operation saves some cases. As a rule life is not prolonged beyond two years, but after careful diet, with or without gastro-enterostomy, a great improvement may occur for a few months.

Treatment: Careful diet and lavage produce striking temporary improvement in some cases. The administration of HCl is apparently of value. In all doubtful or early cases operation should be advised.

A bank president, 74 years old, of large frame, lost his father at 64 from apoplexy, his mother at about the same age from phthisis. Several of his sisters also died of phthisis. His health has been exceptionally good, and a daughter cannot remember his having taken to his bed before. During the past year his weight has gradually fallen from 240 to perhaps 190 lbs. His color has been poor occasionally, and it has been noticed that a sudden pull on the part of his horses while driving would make him cry out, "Oh! my stomach!" He has not been able to walk as much as formerly on account of pain in the back and dyspnœa. He has also had sleepy turns, even after breakfast, for a year or more. About four weeks ago, walking up a slight incline after a concert, he lost his breath and had to stop six times on his way home, even after he reached level ground. December 25 he sent for his physician for a "catarrhal cold." The pulse was 38, regular, the temperature subnormal; there was some œdema and eczema of the legs, and moist rales over the base of both lungs, without notable dulness or change in the quality of the respiratory murmur. He stayed indoors and three days later took to his bed. Very soon after this he had frothy, profuse and thin, pink expectoration, with somewhat labored but not quickened respiration. The slow pulse persisted. The urine was about a quart in twenty-four hours, normal in specific gravity, with hyaline and finely granular casts.

January 13 he was seen in consultation. His chief complaint was of weakness and anorexia. Digestion fair, bowels regular; practically no cough or expectoration. Most of the time is passed in sleep. He lies by preference on the right side, with the head low. He looks less than his age; the lips are slightly cyanotic, the respiration easy, the tongue moist and clean, the mind clear when awake. The pulse is 38, regular, synchronous with the apex beat. During the last fortnight it has never been found above 40, and has been counted at 24. The radial arteries are slightly degenerated. The cardiac impulse is in the fifth space, nearly an inch beyond the left nipple; dulness seems rather increased to the right. Systolic murmurs are heard in both the aortic and mitral areas, and the second sound is reduplicated at the apex. The lungs are clear. There is dulness below the right costal border, but palpation gives negative results in that region. Beyond slight œdema of the feet, physical examination is otherwise practically negative.

1. Common causes of loss of weight? Improper or insufficient diet, diarrhœa, arterio-sclerosis and the attendant changes of old age, loss of sleep, malignant disease.

2. Causes of bradycardia? It is important to distinguish infrequent heart-beat from infrequent pulse-beat due to failure of transmission of a weakened cardiac impulse. True bradycardia occurs after fevers, great exertion, parturition, in the toxæmia of nephritis, cirrhosis, and jaundice, in organic brain disease (tumor, abscess, meningitis). The most marked and long continued cases of bradycardia are usually associated with coronary sclerosis and myocarditis.
3. How is the frothy, pink expectoration to be explained in view of the fact that at a later examination the lungs were clear? Frothy, pink expectoration with labored respiration is in all probability due to pulmonary œdema. This condition may be temporarily produced and arrested by unknown causes, and thus at a later examination may be wholly absent.
4. What is to be suspected when epigastric pain seems to be brought on (as in this case) by exertion? Angina pectoris.
5. What physical signs should be looked for in the neck in this case? Systolic jugular pulsation.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: In a man of 74, with symptoms distinctly suggesting angina pectoris, the association of sleepy turns and a pulse between 24 and 38 means Stokes-Adams syndrome with coronary sclerosis. The dyspnœa, the "catarrhal cold," the later attack of pulmonary œdema, the urinary and digestive symptoms, and the slight œdema of the feet, are all to be explained as results of myocardial weakness. The loss of weight is probably due to arterio-sclerosis.

   Prognosis: Nothing is more difficult than to state the probable duration of life in such a case. Recovery is impossible and death may occur at any time, yet life may be prolonged and considerable comfort secured for months or years.

   Treatment: Restriction of activity, mental and physical, good hygiene, limitation of sodium chloride in the diet, and the administration of KI and nitroglycerine in small doses, are the chief indications.

A well-developed and fairly well-nourished man, 18 years old, is seen for the first time February 26. His father died of consumption, his mother of rheumatism and heart disease. He has never drunk steadily, though occasionally to excess. He chews five cents' worth of tobacco and smokes twenty cigarettes daily. For eighteen months, ending seven months ago, he had almost daily coitus. For the last six months he has had gonorrhœa. When a child he had diphtheria, at fourteen typhoid, for the past seven months pain in the epigastrium, on rising, and latterly some pains about the head. Ten days ago, when he tried to get up, he had vertigo, chilliness, sweating, and a feeling of unsteadiness. He has been in bed most of the time since.

The symptoms were: weakness, backache, epigastric pain (without nausea or vomiting), cough with whitish expectoration, thirst, headache, and constipation. His chief complaint now is weakness, next to that headache and dizziness. There is some dyspnœa, but the cough is not troublesome. There has been no nosebleed.

The patient is pale. His pupils are equal and react to light. The tongue is protruded promptly and in a straight line, is not particularly tremulous and bears a slight white coat. Both sides of the chest move equally; there are no areas of marked dulness, of increased vocal resonance, or of bronchial breathing. A few coarse moist rales are heard persistently at the right apex. The heart's apex is in the fourth space in the nipple line. There is no murmur nor enlargement. The pectoral muscle contracts when percussed. The skin flushes easily. The abdomen is enlarged, tympanitic, not tender. There is gurgling in the right iliac fossa. The spleen cannot be felt; its area is tympanitic. The hepatic area is normal. There are no rose spots. The knee-jerks are lively. A few glands are felt in the left side of the neck, and on the right side is a scar. The white cells number 3600. Temperature 101°, pulse 80, respirations 25. The urine has a slight trace of albumen, with a sediment containing pus and squamous epithelium. No diazo reaction is present. No tubercle bacilli are found in the sputum.

During the next five days the temperature is irregular, varying between 99° and 103°. The respirations rise slightly, to 30. On March 1 a faint diazo reaction is obtained. The headache ceases after February 29. Constipation persists. On March 2 the physical examination is the same as on February 26. On March 3 there are involuntary micturition, Cheyne-Stokes respiration, and external strabismus. Nothing peculiar is noticed about the neck.

1. What are the most significant facts in this case? The family history of tuberculosis, the debilitating habits, the existing gonorrhœa, the headache and

vertigo, the persistent rales at the right apex, the fever, the leucopenia, the headache, Cheyne-Stokes breathing, and strabismus.

2. What is the importance of the pulmonary signs? In spite of the absence of the tubercle bacilli in the sputum, such signs are distinctly suggestive of tuberculosis. They may, however, result from broncho-pneumonia due to influenza or unknown infections.
3. Why is the cardiac impulse displaced upward? Because of the abdominal distention.
4. What do you infer if a pectoral muscle contracts when percussed? Increased muscular irritability, such as is present in many cases of debility, however produced.
5. Does the course of the temperature curve suggest any particular disease? Such a curve is most often seen in pyogenic infections.
6. What is the value of the diazo reaction in this case? The presence of a diazo reaction is never of considerable diagnostic value, though its absence in a febrile case argues against typhoid. In any disease it is a bad *prognostic* sign.
7. What is the value of the sputum examination in this case? A single negative sputum examination must be repeatedly confirmed before it becomes evidence against pulmonary tuberculosis.
8. What further examinations should be made in this case? None is essential, but a Widal test and a lumbar puncture would help to decide the question between typhoid and meningitis, and if the latter exists, to determine the organism to which it is due.
9. How do you explain the condition of the neck? Only by saying that any single symptom of any disease may be absent in a particular case.
10. Diagnosis? Prognosis? Treatment?

    Diagnosis: The data collected in the answer to question (1) point strongly toward acute general tuberculosis with predominant meningeal symptoms. Typhoid fever is the most important alternative, but seems unlikely, in view of the marked cerebral symptoms. A Widal reaction would help to settle this question, also a lumbar puncture. The leucopenia is consistent with tuberculous meningitis, but not with other types. The family history of tuberculosis, the cervical adenitis, the scar and the signs at the right pulmonary apex, also support the diagnosis of general tuberculous infection. The temperature is consistent, likewise the diazo reaction. The condition of the abdomen is one often seen in a variety of infectious diseases.

    In the further course of the case, the mental dulness deepened to stupor, the pulse gradually fell to 70, swallowing became difficult, ankle-clonus appeared, and the arms were at times rigid and contracted. In view of all these facts, the diagnosis of general tuberculosis with meningitis was made with confidence and was confirmed at autopsy.

    Prognosis and Treatment. (See above, Case 20.)

Single lady, 57 years old, always more or less of a nervous invalid, consults a physician for palpitation and dyspnœa on exertion. The menopause occurred five years ago, and since then she has been getting very stout and disinclined to exertion. She is thirsty and her skin is dry and perspires very little. Of late, the feet have been swelling and her face seems puffy all the time, not especially under the eyes. She is troubled a great deal with headaches, worse at night, and her hair has been coming out of late. No sore throat, but the shin bones are tender and the tissues over them pit slightly on pressure. The bowels are very costive, appetite capricious, sleep disturbed by headache. Her memory is very poor and she takes little interest in anything.

Physical Examination: Heart's area cannot be marked out on account of the great thickness of the fat layer. The apex is not seen or felt; best heard in sixth space, one inch outside nipple. Sounds heard feebly, action irregular. Pulmonic second sound accentuated; no murmur. Lungs and abdomen negative. Temperature 97.8°, pulse 100. Urine 1018, acid, large trace of albumen, no sugar. Amount two quarts. Sediment: hyaline, granular casts, small diameter, some with cells adherent. Blood: Red 6,000,000; white 12,000. Œdema of ankles. Hands and feet cold.

1. Cause of feeble heart sounds in this case? The thick fat layer.
2. What are the common causes of tenderness over the shins? Œdema, periostitis.
3. Why is the number of red cells so large? This number is often found in perfect health. Here it is probably due to weak circulation and peripheral stasis.
4. What causes of headache are common at 57? Arterio-sclerosis, uræmia.
5. What further tests are important for diagnosis? Measurement of the day and the night urine. The effects of thyroid extract.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: (*a*) Obesity and its results, (*b*) arterio-sclerosis with involution psychosis, and (*c*) myxœdema, should be considered. Neither of the first two often produces dry skin or loss of hair. In favor of myxœdema are the age and sex, the cutaneous, facial, and mental changes, and the sub-normal temperature. The administration of thyroid extract was followed by a rapid and permanent amelioration of all the symptoms (including those referable to the heart and kidney), and the diagnosis of myxœdema was thus confirmed.

   Prognosis: In most cases the symptoms can be permanently checked by the continued use of thyroid extract; occasionally it is difficult rightly to gauge the dose, and a few patients do not at first bear the drug well.

   Treatment: The thyroid preparations furnished by any of the leading pharmaceutical firms are usually satisfactory. Beginning with two grains twice a day, the dose should be gradually increased until fifteen grains a day are taken. If at any time the pulse rises more than ten beats above its normal level, the drug should be stopped until the rate becomes normal again. If this precaution is observed no serious symptoms of thyroidism will occur. In the earlier stages of treatment, loss of weight is rapid and laudable.

A sailor, 39 years old, is seen on November 5. His mother died of "stomach trouble." Has had gonorrhœa three times, and 10 years ago a sore on his penis. No secondary symptoms were observed. Always well up to two years ago, when he began to have epigastric pain after eating. He vomited frequently and usually with relief of pain. After three months in a hospital, he improved somewhat, but after discharge the old symptoms returned and with them headache and alternate constipation and diarrhœa. He again entered a hospital and remained 6 months, but lost strength and weight steadily and vomited everything taken. The vomitus, occasionally amounting to a quart at a time, was often "dark in color, and now and then contained a streak of blood." The patient is much prostrated and emaciated. The abdomen is retracted, but more prominent in the epigastrium, where there is some rigidity of the muscles and a little tenderness. Physical examination is otherwise negative. Pulse 110, respiration 18, temperature 98°. Urine 1020, alkaline, no albumen, no sugar. The inflated stomach extends from the normal limit above to an inch below the umbilicus. Its capacity is fifty-four ounces. Two days ago, an hour after a test breakfast of one ounce of bread and ten ounces of water, twenty ounces of brownish fluid, containing much mucus, were withdrawn. Free HCl and blood absent. Lactic acid, intense reaction. Butyric present. This morning the stomach was washed out again, and a pint of oat-gruel was given. An hour and a quarter later twenty ounces were withdrawn which contained considerable mucus but no blood. Free HCl absent; combined, present in small quantity. Lactic acid, a trace. Total acidity, .237. The leucocytes before eating numbered 5600; after 7300. The stomach after inflation extended from the normal limits above to an inch below the umbilicus. Its capacity was fifty-seven ounces.

1. How many ounces of fluid does the normal stomach hold? About forty-eight
2. Significance of mucus in the stomach content? Mucus is always present in the stomach. By practice with many cases needing gastric lavage, one learns to recognize how much mucus is to be extracted from the normal stomach, and hence to recognize marked excess suggesting catarrh.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: Gastric pain and vomiting (the vomitus bloody, and sometimes a quart in amount), loss of flesh and strength, evidences of gastric dilatation and stasis, and the continued absence of HCl, all point towards pyloric cancer. The scar of an ulcer near the pylorus (peptic or syphilitic) might, by contraction and obstruction of the pylorus, bring about gastric dilatation, stasis, and the other symptoms of this case; but the continued absence of HCl, the absence of hemoptysis and the age, make gastric cancer more likely.

   Prognosis and Treatment. (See above, Case 50.)

A woman of 41, with good family history, has been married twice. The cause of the death of her first husband is unknown. During her first marriage she had two miscarriages. By her second husband, who appears healthy, she has never been pregnant. She has no rheumatic history. For 10 years she has not been able to walk far without dyspnœa, but her health was good until seven years ago, when at Carlsbad she took several baths, and just after the last a sudden left hemiplegia developed. For 4 months she could not be moved, and the left arm and leg, though useful, have never regained full power. She has always risen once in the night to urinate. Yesterday she was as well as usual. She wakened her husband about 1 A.M. to-day, and again, later, spoke to him. By 4 A.M. she was semi-conscious, could not speak, and had a right hemiparesis, most marked in the face.

Next morning the color and nutrition were good, the face not flushed, respiration easy, the breath free from odor. The tongue was slowly protruded on demand, but her comprehension was much limited. Temperature normal. The radial pulse could not be counted: the apex beat was sometimes 44, again 72 per minute. The first apex sound was excessively sharp, the pulmonic second accentuated. No murmurs, no thrill. The heart did not seem enlarged. Complete aphasia and inability to swallow. She moved the right arm somewhat, the right leg a very little. Contractures of the left fingers. The superficial reflexes were absent; no deep reflexes in the right arm or left leg; knee-jerk present on right. Abdomen negative. The urine was 1012½ in specific gravity, pale, with a slight trace of albumen, no sugar, a few hyaline and fine granular casts.

1. Types of facial paralysis? *Central* paralysis, usually appearing as part of hemiplegia, *aural* paralysis, occurring in cases of well-marked ear disease, and *peripheral* paralysis, occurring without any other lesion.
2. What odors in the breath are of diagnostic or prognostic value? Those of alcohol, acetone, and illuminating gas in diagnosis; the foul, heavy odor of many serious diseases in prognosis.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: The sharp first sound, accented pulmonic second with chronic dyspnœa and two attacks of hemiplegia point to mitral stenosis and cerebral embolism. The presystolic murmur has disappeared owing to cardiac weakness. Cerebral syphilis is suggested only by the history of miscarriage.

   Prognosis: She may live years, but the paralysis is not likely to be recovered from wholly.

   Treatment: Feed by rectum until she can swallow, KI to exclude syphilis.

A clerk, married, twenty-four, is seen Jan. 5. His family and previous history and habits are good. He went to bed the night of the 3d in his usual health and slept well. On rising in the morning he had a severe chill, but went to business. After an hour or two he was obliged to return home, feeling very weak and aching all over. He took to his bed, raised some bloody sputum, had some nosebleed, and passed urine freely without pain, containing much fresh blood.

When seen he did not look very ill; pulse 100, respiration 24, temperature 103.6°. He complained of no pain. Physical examination was negative, except for slight dulness with feeble respiration and fine rales over the left posterior base of the chest.

There were several discrete, viscid, tawny sputa in a cup. The urine was smoky, 1014, with a very large trace of albumen, urea 1.64%.

The sediment contained considerable normal and abnormal blood, rather numerous epithelial casts of large diameter, one disintegrated blood cast; one or two large, fine granular casts.

1. What diseases are apt to have such an onset? Meningitis, influenza, septicæmia, tonsillitis, and pneumonia.
2. What diagnostic data are wanting? The twenty-four hour amount of urine, microscopic examination of the sputum and of the blood.
3. What conclusions can be drawn from the percentage of urea? No conclusions of any importance, unless the quantity and quality of the patient's diet is known and controlled, unless we know the twenty-four hour amount of urine, and unless we can exclude such influences as vomiting and diarrhœa. Obviously, these conditions are not often possible.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The clinical picture is that of an infectious fever with signs pointing especially to the left lung and to the kidneys. Tuberculosis and pneumonia are especially to be considered. As the hemoptysis preceded the nosebleed, it is not likely that all the blood came from the nose. The position of the pulmonary signs and the suddenness of onset, with chill and general pains, are much more characteristic of pneumonia than of tuberculosis. The absence of pain on the second day is unusual in pneumonia, but by no means unknown. The physical signs are not those of solidification, but are, nevertheless, just such as are often seen in the early stages of pneumonia. They are also consistent, however, with tuberculosis, and only by the course of the case and by repeated examinations of the sputum can tuberculosis be excluded. If leucocytosis were present it would favor the diagnosis of pneumonia as against tuberculous hemoptysis, but in tuberculosis pneumonia leucocytosis also occurs.

   Hæmaturia without pain and with so large a number of casts points to acute nephritis. Such an urine is decidedly characteristic of pneumococcus infections and tends to support the diagnosis of pneumonia as against tuberculosis.

   Prognosis: About 75% of cases recover. The patient's good habits, previous history and present condition are in his favor, but the nephritis is unfavorable.

   Treatment: Diet according to digestive power. Open windows. Mild diuretics and the relief of symptoms as they arise.

An electrician, 31 years old, of good habits and family history, was seen September 25. Except for an attack of "inflammation of the bowels" two years ago his previous health has been excellent. His work has been hard, and for about two months past he has been consciously tired. About ten days ago he had a little diarrhœa. He was then all right for several days. While walking in the street the evening of September 15, he was seized with severe cramps in the abdomen, not localized, recurring through the night and preventing sleep; no diarrhœa or vomiting. The next morning the doctor saw him in bed with normal pulse and temperature, no abdominal tenderness; the bowels had moved twice normally since the advent of the pain. The next day more or less general pain was still present; tenderness over the lower abdomen, more marked on the left side, was noted; the temperature was 102° A.M., 103° P.M.; there was some diarrhœa. Calomel was given the day before, opium both days. September 18 the morning temperature was 104.5°, pulse 110, pain and tenderness were more marked, and slight distention was noted. At the evening visit the pain had moved to the epigastrium and subsequently continued high rather than low. The following day the temperature dropped to 100, pulse to 90. The bowels did not move from the 18th until the 21st, then after enema. Again on the 24th there was a large, partly formed dejection, and much gas passed the 25th. Vomited twice on 21st after barley water; not before or since. Abdominal distention has gradually increased. The mind was clear; the pulse fairly good; tongue slightly coated; decubitus dorsal with legs outstretched; moderate pain and tenderness in upper abdomen, not sharply localized; chest negative; abdomen moderately and generally distended, duller in the flanks and hypogastrium than superiorly, the dull areas changing somewhat with changing position. Urine and rectal examination negative. No tumor or localized resistance. Blood not examined.

1. Common causes of symmetrical abdominal distention? Tympanites, obesity, ascites, tuberculous peritonitis.
2. What can be inferred from the statement "decubitus dorsal with legs outstretched"? That no considerable abdominal pain is present.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: The sudden onset of severe abdominal pain, with fever, rapid pulse, constipation, abdominal distention, slight general tenderness and shifting dulness in the flanks, points to general peritonitis probably due to appendicitis, possibly to cholecystitis. Calomel aggravated the lesions and opium masked the symptons. Intestinal obstruction is excluded by the effect of cathartics.

   Prognosis: Perhaps one case in five recovers; the outlook depends upon the virulence of the infection and the skill and speed of the surgeon.

   Treatment: Laparotomy and drainage.

A plumber of 40, of good family and previous history and good habits, had clap many years ago with good recovery.

One year ago he had an obstinate cough with expectoration (not examined) and a "patch" in his right lower front chest. He went to Florida and recovered entirely. About two months ago he noticed swelling of the face and neck, especially in the morning, and had to enlarge his collars. Stooping caused headache, a slight choking sensation, and swelling of the veins of his face and neck. After some weeks he had fever, malaise, and swollen tender glands (?) in the neck, especially on the left side. In the course of a week he was so much better that he resumed work. Recently the swelling of the face and neck have returned and are more marked in the morning. The left arm has also swollen, without pain or tenderness. He has had several nosebleeds, with relief to his head. Yesterday his temperature was 101.4°, to-day 99.6°. Pulse 80, regular. The appetite, digestion, bowels, and sleep and respiration, are normal. The eyelids have been puffy, but are not so now. The face, neck, and upper part of the thorax are swollen and hyperæmic. The veins of the arms and their valves are very distinct, especially on the left side, and are markedly dilated in the left lower axillary region and along the right diaphragmatic attachment. Visceral examination, the blood, and the urine are negative, also the throat. The voice is clear. No glands in either axilla or groin.

1. What are the possible causes of swelling of one arm? Venous thrombosis or pressure on a venous trunk between the arm and the heart; inflammatory exudation (sepsis); arterial thrombosis. Occasionally dropsical œdema may settle in one arm if the patient has been lying long on one side.
2. What are the common causes of swelling of the face? Nephritis, cardiac disease, inflammatory œdema (as in erysipelas), angio-neurotic œdema. In the early morning many persons have swelling of the face off and on without known cause or sequelæ.
3. What can be inferred from the increase of the swelling in the early morning? All types of facial œdema (whether of known or unknown origin) are apt to be more marked in the morning. Hence this change has no diagnostic value.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: Œdema and hyperæmia of face, neck, upper thorax, and left arm, with dilated veins in these areas and lumps in the neck (later disappearing), point to mediastinal pressure on venous trunks. There are no signs of aneurism. New growth is the only alternative. The thymus is a possible site of origin for the tumor. The other facts in the case are consistent with this diagnosis — which was confirmed at autopsy — cancer of the thymus.

   Prognosis: Progressive decline and death within six months.

   Treatment: X-ray should be tried, otherwise the treatment is symptomatic.

A business man, 58, with good family history and habits, had, about twenty-five years ago, a severe rheumatic fever, disabling him for several months. Ever since then his pulse has been more or less irregular; but he has suffered no inconvenience until about two years ago when he noticed that walking up hill caused dyspnœa. Since then he has lost upwards of fifty pounds in weight. For the past three months he has driven to his business for an hour a day only, and been kept awake by dyspnœa and pain in the right side of the abdomen. Appetite has been poor and digestion impaired.

Pulse irregular, intermittent, rapid, not corresponding with the heart-beat. Respiration easy when quiet, temperature 98.6°.

Complexion sallow, with yellowish tinge to sclerotics. No cyanosis. Tongue heavily coated. Moderate œdema of lower legs. Lungs clear. Cardiac apex not defined to eye or touch. Percussion shows increase in the transverse diameter of the heart, the action of which is so rapid and irregular that only a doubtful systolic apex murmur can be heard. The second sounds are clear, the pulmonic not specially accented.

The belly is flabby, the navel not flushed. Percussion dulness in the flanks shifts with changing position. No fluctuation wave. Three inches below the right costal border and across the epigastrium a solid body, tender, with a firm edge descending with inspiration, is felt.

The urine, normal in amount, specific gravity 1028, contains a large trace of albumen, 2% of sugar, 1.26% urea, no bile, acetone, or diacetic acid. Sediment, a few normal blood globules, a rare hyaline cast.

1. Common causes of sugar in the urine? Diabetes mellitus, neuroses (worry, fear, etc.), coma from any cause (including narcotics), pregnancy.
2. How do you explain the loss of weight? Poor appetite and digestion combined with arterio-sclerosis and with glycosuria.
3. Commonest causes of pain in that region? Appendicitis, gall-stones, pelvic inflammation (in women).
4. What caused the pain in the right side of the abdomen? Hepatic congestion.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Dyspnœa, digestive disturbance, a dilated, rapid, and irregular heart, swollen legs, ascites, enlarged liver with slight jaundice and a urine showing renal congestion, — all point to an uncompensated cardiac lesion with passive congestion of the lungs, stomach, liver, peritoneal cavity, kidney, and legs. The exact condition of the heart cannot be stated. Its insufficient strength may be due to mitral regurgitation produced by the old rheumatic endocarditis (see history) and compensated until two years ago. It is more likely to be a myocardial weakness (with or without mitral disease) that produces the poor heart action. He is at the age for arterio-sclerosis and so for

myocardial weakness, but we have no data here as to his arteries. The glycosuria will probably persist. If so it is to be classed as diabetes.

Prognosis: Impossible to state accurately. Probably he will not live over six months, but he may live years, or die suddenly in a few days.

Treatment: Rest, depletion, restriction of salt in diet; later, digitalis (cautiously) and Nauheim treatment, also with great caution. General hygiene, diet, sleep, air, encouragement are of great importance.

P. J. G., 20 years old, a piano varnisher, was admitted to the hospital Oct. 3, 1903. For about a year he had suffered from occasional pain in the epigastrium, and for six months had always had pain after taking food. One week ago, he received a blow in the right hypochondrium while boxing, and after that had slight pain in that region until the day before entrance, when he was taken suddenly ill with violent, griping pain, starting in the epigastrium and spreading all over the abdomen. His bowels had not moved since this pain started. He vomited after taking warm drinks, and had a chill lasting one hour. He walked to the Out-Patient Department, where his temperature was found to be 100.3°, pulse 60. His skin was slightly yellow. The abdomen showed no distention. There was slight general spasm and tenderness over the gall-bladder region. No mass could be felt. The leucocyte count was 16,000. With rest in bed and emptying of the bowels by enemata, the tenderness and spasm over the gall-bladder region disappeared until on October 7 there were very few symptoms left.

Diagnosis? Prognosis? Treatment?

Diagnosis: The symptoms are those of acute localized peritonitis. Other causes of epigastric pain (such as plumbism, tabes, and uræmia) are excluded by the tenderness and spasm. Localized peritonitis in a man of 20 is oftenest caused by appendicitis, cholecystitis, and gastric ulcer. Pancreatitis, intestinal obstruction, and floating kidney are rare causes, especially in a young man. Acute gastro-enteritis usually produces diarrhœa and has less tenderness and spasm.

Between appendicitis, cholecystitis, and gastric ulcer the following considerations should be weighed. Cholecystitis is not common under 25, nevertheless the site of the physical signs in this case corresponds accurately with that of the gall-bladder. Gastric ulcer is commoner in women. It is, however, faintly suggested by the history of gastric troubles here. Appendicitis usually produces signs lower down in the abdomen. The constitutional symptoms of the case are consistent with any of the three diagnoses considered.

An operation for gall-stones was done, but the gall-bladder and appendix were found normal. There was an excess of clear, dark, peritoneal fluid and a perforation of the stomach near the pyloric end, which was glued to the under surface of the left lobe of the liver by fresh adhesions.

Prognosis: Untreated this lesion may result in pyloric obstruction and gastric dilatation, or it may produce no symptoms. Surgical interference may give prompt and perhaps permanent relief; — few cases have been followed up.

Treatment: In this case posterior gastro-enterostomy was done and the patient was well and at work six months later. Probably surgical interference is the best treatment. At any rate there is no other. We do not yet know enough to say what proportion of cases remain well if untreated, and what proportion of surgical operations are permanently successful in such cases.

February 16 a lady of 30, married 8 years, is seen in consultation. She has had four children, the youngest four months old. After her second confinement had puerperal septicæmia. The catheter was used and cystitis apparently followed, as the bladder was irrigated. Vesical symptoms were troublesome after this, and five separate times she underwent prolonged treatment under an eminent gynæcologist. Finally, discouraged by the persistence of her symptoms, she resorted to "mind cure," with marked relief. Her last confinement was easy, but was followed by a return of vesical symptoms. For the last six weeks she has suffered from indigestion and has had frequent watery stools, preceded by abdominal pain. January 23 she came to Boston, and, acting on the advice of her "mind cure" friend, shopped, went to the theatre, and was generally very active. During this treatment she ate scarcely anything, and at the end of five days returned home. The next day vomiting appeared, and by February 1 the stomach retained nothing. The vomiting ceased within two days and has not since recurred. The bowels have continued loose, moving two to five times daily without notable pain. For two weeks there has been some cough, with little or no expectoration. Since February 1st, pyrexia has been constant, — as a rule, higher at night, though sometimes higher in the morning, ranging between 101° and 104°. The pulse has ranged between 110 and 140. No delirium.

The hands are clammy, the color of the face good, the eye bright, the mind clear, the knee-jerks lively. The chest and abdomen are negative, except for medium rales at both bases, and there is some tenderness along the colon. The urine is said to be negative. It is stated that she is a very reticent person and has never been known to be hysterical.

Diagnosis? Prognosis? Treatment?

Diagnosis: The patient has been well for four years. Hence there is no reason for connecting the puerperal sepsis or cystitis with the present symptoms. She suffers now from continued fever, which has lasted certainly sixteen days and probably more, diarrhœa with slight general abdominal tenderness and dry cough (with rales at both bases). The condition of the blood is unknown. In this country there are three common causes of long-continued fever: general sepsis (including septic endocarditis), tuberculosis, and typhoid; less common are syphilis and æstivo-autumnal malaria. The month and the place make malaria unlikely. (Blood examination ruled it out.) Syphilis should show some lesions, with or without a history of its origin. Such lesions and history were absent here. There were no local signs of tuberculosis or of a septic focus, but as either of these diseases may exist without local signs the most important evidence in this case should be sought in the blood. This showed a Widal reaction and no leucocytosis. The subsequent course was that of typhoid, without the classical mental dulness.

Prognosis and Treatment. (See above, Case 28.)

A cigarmaker, 51 years of age, is seen March 15. Family history negative. Thirty-five years ago had tuberculosis of the knee, which recovered after operation, but left a stiff joint. Eighteen years ago he had jaundice and fifteen years ago syphilis, otherwise always well. Has used beer to excess.

About six weeks ago, while in his usual health, he had an attack of acute bronchitis for which he was given iodide of potassium. This he says upset his stomach and caused vomiting which lasted for a number of days. About two weeks after his cough began he noticed that his skin had a yellow tint which has been steadily deepening. Coincident with the jaundice a circumscribed reddish eruption appeared on various parts of his body and limbs, which was diagnosed by his attending physician as erythema multiforme. Itching has been general and intense. There has been no vomiting for over two weeks, but his food has been carefully regulated. His appetite is poor. He has lost much in strength and flesh. His temperature has remained near the normal line, but has occasionally risen to 100° F., particularly during the last week. The pulse has varied between 70 and 80, with a rising tendency. The stools are clay-colored.

Patient still preserves considerable fat tissue, but has evidently lost weight and looks sick. Deep icterus of a decidedly greenish tinge. Heart and lungs normal. The liver dulness begins at the sixth rib. Its lower edge, which appears to be smooth, can be felt about an inch below the costal margin. A fluctuating tumor of indefinite outline and size is suspected below the hepatic edge about in the mamillary line. Percussion over it shows an area of dulness about two inches in diameter. Deep palpation of abdomen reveals no other abnormality. No glandular enlargement, no characteristic scars. Urine contains much bile, but no other abnormal constituents. White cells 8000.

1. What points in the past history are most important here? The syphilis and the alcoholism.
2. What diseases produce the deepest icterus? Gall-stones and cancer of the pancreas.
3. (*a*) What is the tumor? and (*b*) what is its connection (if any) with the eruption and the itching? (*a*) Probably the gall-bladder. (*b*) None. The eruption is due either to KI or to syphilis (see below), and the itching to jaundice.
4. Do you expect pain in this case? Why, or why not? Probably not, because there is probably no disease present which stretches the liver's capsule.
5. What explains the fever? Syphilis and cancer both cause fever (see below).
6. Are any important data missing? The condition of the chest, the size of the spleen, evidence for or against ascites.
7. Diagnosis? Prognosis? Treatment?

Diagnosis: Syphilis of the liver, cirrhosis, gall-stones, and cancer are to be considered. Cirrhosis cannot be diagnosed in the absence (as here) of any evidence of portal stasis. It cannot be positively excluded, but does not account for all the facts in the case. Gall-stones are rarely associated with *both* jaundice and palpable gall-bladder. (The tumor in the gall-bladder region is probably thus to be explained.) Syphilis can only be excluded by the therapeutic test, but it rarely produces jaundice or enlarged gall-bladder. Cancer of the pancreas is the commonest cause of the group of symptoms here present; the common bile-duct is pressed upon by the tumor, and intense jaundice with dilated gall-bladder results.

Prognosis: A few months of life.

Treatment: Symptomatic.

A physician, 51 years old, is seen Jan. 15. Has had rheumatism off and on since childhood, but no cardiac symptoms; has walked a great deal and has done a large practice without a carriage. November 17, he began to have chills and sweating at irregular intervals, but kept at work until December 27, when he had sudden pain in the left leg, followed by some coldness and numbness.

Since December 30, there has been fever from 99.5° to 103°, with irregular chills. Few days ago, seized with pain in right arm, and the pulse was not to be felt in that wrist. Also a transitory blindness in right eye. Pulse 72, regular, good strength. Presystolic murmur at apex. No cardiac enlargement. Arms and legs now warm. The patient is bright and not feeling very sick. Spleen slightly enlarged, palpable, tender. Some doubtful rose spots. At the right base behind a patch of bronchial breathing about the size of an apple with crackling rales and increased voice sounds. No distinct dulness. Urine said to be negative.

1. Common causes of true chills? Malaria, sepsis, tuberculosis, the onset of any infection, neurasthenia.
2. In what diseases beside malaria may chills recur daily at the same hour? Sepsis, tuberculosis.
3. Types of thrombosis? Puerperal, infectious (typhoid), post-operative, marantic, those seen in cardiac disease, and those of unknown cause.
4. Causes of presystolic murmurs? Mitral stenosis, "Flint's murmur" in aortic regurgitation, tricuspid stenosis, adhesive pericarditis?
5. What symptoms not here mentioned should you expect to see sooner or later in this case? Purpura, emaciation, diarrhœa, and mental symptoms.
6. What should you tell the patient about his condition? Nothing unless he forced the issue. Then the prognosis as given below.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: A long-continued fever with chills, embolic phenomena, and a cardiac murmur suggest at once an infective endocarditis, whether "malignant" or not remains to be seen (see prognosis in Case 40). Emboli appear to have lodged in the arteries of the left leg, right arm, right eye, spleen, and lung (bronchopneumonia). The "rose spots" are skin-emboli. In view of the "rheumatic" history we may suppose that the acute endocarditis was here engrafted on a chronic process. Blood examination showed a marked leucocytosis and no Widal reaction. The urine showed the ordinary evidences of an infectious process.

   Prognosis: Recovery is quite possible (see above, Case 40) but not likely. The symptoms may continue for weeks or months and finally cease or kill. Between mild and malignant processes there are intermediate types of all degrees of severity.

   Treatment. (See above, Case 40.)

A negress of 67 has had "falling of the womb" for forty years. To hold it up she stuffs a wad of cotton into the vagina and ties a tight bandage round the lower part of the abdomen. Some years ago a lump grew in her belly, — "sore as a boil." One night she heard a click, felt something give way, and "it all ran out the front passage," after which she felt all right. Eight months ago she noticed another lump in her belly, not tender, but sometimes "it kicks just like a baby."

Five days ago she "felt pretty smart," but had had no dejection for two days. Four days ago swelling of the belly, tenderness in the left groin and vomiting began. Three days ago had a small, hard dejection and ceased vomiting, but since then "the lump in her belly has been moving round and making a noise." Pain, distention, and constipation have continued.

Examination: Does not seem much sick. Temperature 100°, pulse 100, respiration 32. Chest negative. Belly much distended, tympanitic, and somewhat tender, especially in the left iliac fossa, where there is dulness and a rounded mass size of an orange can be felt. Pressure over this mass causes the cervix uteri to move down. No thorough pelvic examination is possible on account of tenderness.

1. What was the probable cause of the symptoms described in lines 5–7? Salpingitis or pelvic peritonitis.
2. By what means can we secure abdominal relaxation when deep palpation is important? A warm bath or an anæsthetic if the bath is insufficient.
3. What light might be thrown on this case by examination of the blood? If leucocytosis is absent, suppuration is unlikely.
4. Should you recommend operation in this case? What would influence your decision? (See below — Treatment.)

Diagnosis? Prognosis? Treatment?

Diagnosis: The history is of salpingitis some years ago, — of a painless lump in the belly for eight months, and of five days' acute symptoms. The acute symptoms are constipation, vomiting, painful, swollen, and tender belly, with borborygmi and slight fever. A mass apparently connected with the uterus is also felt. In a negress any pelvic disturbance should suggest fibroid, especially if there is a palpable tumor connected with the uterus. How can a fibroid produce acute symptoms? By suppuration, twisting of a pedunculated portion, or both. The methods of holding up the uterus described in paragraph one would certainly favor the occurrence of pelvic suppuration, but it is hard to say whether they are connected with the symptoms in this case. Further diagnosis is impossible with the data given.

Prognosis and Treatment: If there is slight or no leucocytosis the trouble will probably quiet down under rest, enemata, hot poulticing, and, if the pain is severe, morphia. Try this for twenty-four hours and, if there is any amelioration, for twenty-four hours more. If at any time fever, pulse, or leucocytosis rise, or if pain and tenderness increase, operation may be needed. As a matter of fact this patient's symptoms were gone in ten days without operation.

A laborer of 29 was seen March 5. Took to bed a week ago with fever. Now he looks very dull, with lips dusky, tongue dry, and brown, teeth crusted with sordes. Temp. 101.5°, pulse 100, resp. 32. His chief complaint is of nervousness and insomnia, but he admits that his appetite is very poor and that he has vomited several times within the past week. He denies alcohol and venereal disease.

Chest negative. Abdomen slightly distended, tympanitic, not tender. Spleen not felt. The skin is unusually smooth and silky. There is twitching of the arms and legs and tenderness of the latter. All his movements are very alert. Urine: Normal color, acid, 1020, a trace of albumen, no sugar, no diazo reaction. Sediment, much pus (microscopic) and mucus, a little normal blood. The Widal reaction is negative.

Scattered over the whole body is a dull red macular rash, about the size of a split pea or smaller. In places it is copper-colored.

1. What explains the condition of the mouth? Fever, mouth breathing, and neglect.
2. (*a*) What are the commonest causes of insomnia in a laborer of 29? (*b*) In old age? (*c*) In a baby? (*a*) Alcoholism. (*b*) Arterio-sclerosis and its consequences; physiologically, the old sleep much less than the young. (*c*) Indigestion.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: The most distinctive physical signs here present are *fever* and a *rash*. The fever is moderate and is said to have lasted a week, but we cannot judge whether it was of the continued type, or irregular and intermittent. Nervousness, abnormally alert motions, and insomnia is a trio of signs which in a laborer we learn to associate with alcoholism and threatened delirium tremens. The smooth and silky skin is another important though not constant sign of alcoholism. The denial of drinking habits is not important in the presence of four such evidences. Can alcohol alone cause fever? Surely — and the fever is usually moderate, as in this case; but it is important to exclude by careful physical examination all infectious processes, especially pneumonia. This has apparently been done in this case and the diagnosis would seem to be delirium tremens. The poor appetite and vomiting in the previous week are then probably of alcoholic origin.

   The rash is still unexplained. Macules of this size and color, without itching or hemorrhage, are usually due to syphilis. The patient's denial of infection is not of importance and in this case was later shown to be false. That the fever was in part of syphilitic origin was suggested by the fact that when the other symptoms of alcoholism ceased, the fever lasted on for some days. What other manifestations of syphilis might occur at this time? Adenitis, mucous patches, alopecia, periostitis, iritis. None of these appeared, however.

   Prognosis: Recovery from the alcoholism occurs in nine tenths of such cases within two weeks. Relapses are frequent. The syphilis has the usual uncertain prognosis of that disease. All that we can say is that if treatment is energetic and persistently carried out most cases get well.

   Treatment: For the alcoholism, careful feeding, hypnotics, a small amount of alcohol, and such restraint as is necessary. For the syphilis, KI and Hg. applied in the usual ways and persisted in for two years at least.

A prominent manufacturer, 62, of good habits and family history. Never previously sick. Has been much confined for a year and weight has increased from 164 to 174 lbs. Was seen February 15.

Shortly before Christmas he noticed shortness of breath on walking. His urine at that time was pronounced negative. The dyspnœa on exertion got no better and substernal pain extending over the arms was soon superadded. This pain was not very severe, and came on only during exertion. About two weeks ago, after a hearty, rapid, and rather indigestible mid-day dinner, he was taken at his mill, without antecedent exertion, with a very severe attack of pain as above described. When his physician reached him he was in a cold sweat and seemed alarmingly ill. Pulse 80, regular. After two hours he was driven home four miles, arriving with pulse at 80 and temperature at 97.5°. The next day the pulse was 100, temperature 100°, rising to 120 and 102° the next day. There was bloody expectoration, with signs of consolidation at the right posterior base. For the past week the pulse and temperature have been normal. When seen February 15 he stated that he felt perfectly well. He looked rather pale, lay in bed with his head low, breathing easily, not cyanotic. The pulse 80, intermitted occasionally. The artery was soft, tension not high. No œdema. The heart was not enlarged; sounds clear. A few rales without dulness over the left posterior base. Percussion was dull with resistance an inch below the right costal border, but the liver edge could not be felt. The urine, 52 to 54 oz. per diem, contained a decided trace of albumen and a few hyaline casts, sp. gr. 1020, urea 2%.

1. What diseases increase weight? Obesity, cardiac and renal disease, myxœdema.
2. Causes of bloody expectoration? Phthisis, pneumonia, infarction of the lung due to congestion (as in mitral disease or from embolism), pulmonary abscess or gangrene, wounds or malignant disease of the lung, ruptured esophageal varices (in cirrhotic liver), leaking aneurism.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: In a man of 62 dyspnœa and substernal pain produced by exertion, extending to the arms and relieved by stopping, are symptoms almost pathognomic of coronary sclerosis with angina pectoris. The pain of aneurism is somewhat similar, but has not the close dependence on exertion. The severe attack two weeks ago seems to have ended in pulmonary congestion and hypostatic pneumonia. The examination of February 15 adds only the evidence of an arterio-sclerotic kidney. It is surprising that arterial tension appears low. Was the aortic second accentuated?

   Prognosis: With great care such cases may live many years, but any exertion or excitement may prove fatal and the advance of the arterio-sclerosis lesions in heart, brain, or kidney may kill at any time.

   Treatment: Avoid mental and physical strain. Use nitroglycerine in attacks and KI steadily.

A gentleman of 82 is seen April 17. He has always enjoyed good health, except that a number of years ago he suffered from attacks of pain in the right upper abdomen, diagnosed as bilious colic, and for which he kept morphine constantly on hand. During the past year he has aged rapidly, but he attended to business regularly until a month ago, when painless jaundice came on and rapidly deepened, the stools being clay-colored. A week ago the jaundice seemed less and some color was seen in the dejections, but this was only temporary. The appetite and digestion have been fair; he smokes a good deal. He has been up until to-day, when increasing weakness induced him to remain in bed. Pruritus has interfered much with sleep. The temperature has been normal until to-day, when 100° was registered. The pulse has been regular, about 70; yesterday it was irregular and intermittent.

When seen he was sleeping in the right dorsal decubitus, with easy respiration; pulse 68, regular, of fair strength and volume. Icterus intense, the tongue heavily coated, the mind clear.

Thoracic examination gave negative results, except for slight crepitus at the right posterior base. A smooth edge could be felt below the right costal border, descending with inspiration, not tender. The gall-bladder could not be felt. Abdomen soft, otherwise negative. Urine sufficient in amount, 1018 in specific gravity, deeply icteric, with a trace of albumen, hyaline and granular casts.

1. Name and distinguish five common varieties of colic? Biliary, renal, uterine, intestinal (including saturnine) and that due to Dietl's crises. In biliary colic the pain is apt to spread from the region of the gall-bladder to the back and right scapular region; jaundice may appear before, during, or after the attack. In renal colic the pain follows some portion of the course of the ureter, and is often associated with the passage of blood or gravel by urethra. Uterine colic is usually associated with or precedes flowing — menstrual or irregular — and is referred to the groins or pelvis. Intestinal colic (if not saturnine) is associated with diarrhœa or flatulence. It shifts its position frequently. Lead colic is recognized only by association with other evidence of lead (gums, blood, brain, extensor muscles). Dietl's crises are recognized only by the association of abdominal pain with the presence of a floating kidney and the absence of the signs of other colics.
2. What significance has the fact that the gall-bladder is not felt here? A gall-bladder not tense with fluid cannot be felt, whatever its size, and the belly walls often prevent any satisfactory exploration of this region. Hence negative evidence is of little value.
3. What cerebral symptoms are likely to appear later in this case? Coma, delirium, vomiting, and convulsions — as in uræmia.
4. When a patient ages rapidly what disease is probable? Arterio-sclerosis. Diagnosis? Prognosis? Treatment? (See above, Cases 23 and 62.)
Autopsy showed cancer of the duodenal papilla.

A young married woman of 21 had an abortion done at the third month. Immediately following this she began to vomit occasionally, and after two days could retain nothing. The lochia were sweet, temperature normal, and there was no tenderness in the pelvis. Rectal alimentation was tried for three days and the vomiting ceased, but recommenced as soon as liquids were given by mouth. Again rectal feeding was tried, but this time the vomiting did not cease. The nutrient enemata are fairly well borne, the nurse says, but the patient is very sleepless and thirsty and has four or five severe retching spells in every twenty-four hours. She is seen in consultation on the sixth day of rectal feeding.

The temperature and pulse are normal, as they have been throughout; the voice clear and the patient moves strongly in bed. Examination of the chest, belly, and pelvis are entirely negative.

1. How can we determine during rectal feeding whether the enemata are being well borne and absorbed? In ideal cases, there is no thirst or insomnia, hunger is appeased by the enema, nothing comes away except with the daily cleansing enema, and little weight is lost.
2. What means should be used to control the retching in this case? (See below — Treatment.)
3. What important parts of physical examination have been omitted? Urinalysis and blood examination.
4. Significance of the normal pulse and temperature here? Prostration is not great; infection probably absent.
5. Diagnosis? Prognosis? Treatment?

   Diagnosis: Pelvic sepsis is excluded by the normal lochia, the absence of fever, pain or pelvic tenderness. Retroversion of the uterus is said to produce vomiting in some cases of this type, but the pelvic examination excludes this. Can the vomiting be uræmic? To determine this, we examined the urine and found it normal. (The blood was also normal.) The rectal feeding was evidently a failure despite the nurse's assurance, and the patient's nervous system was kept irritable by semi-starvation. Could this account for the vomiting? In view of the negative results of physical examination it seems the most probable diagnosis. Had the enemata been well absorbed the nervous system would probably have been sufficiently nourished to control the vomiting centre. As it is, she is getting no food and losing much sleep. Naturally the vomiting continues.

   Prognosis: If this diagnosis is correct, the resumption of feeding by mouth and the abandonment of rectal feeding will probably check the vomiting in a few days.

   Treatment: The ordinary remedies for vomiting — ice, cocaine, cerum oxalate, hydrocyanic acid, morphia, and rectal feeding — had already proved failures. Under a resumption of feeding by mouth, together with the discontinuance of the source of insomnia and irritation (the enemata), and with effectual encouragement, the vomiting ceased within a few days and the patient's recovery was uneventful. The diagnosis was thus verified.

Man, 66 years old, has had for fifteen months pain; for the first month it was referred to the right hip and buttock. Later, it was felt in the small of the back and in both scapular regions; for six months, pain has been felt in the other hip and occasionally in both legs.

For a month he has had considerable cough, with sputum, occasionally blood-streaked. He has always been finicky about his food, but complained of no special digestive disturbance, except loss of appetite and constipation, which have been continuous and accompanied by loss of flesh. He was previously very fat. For several weeks he has been in bed. Of late has had several attacks of retention of urine, needing catherization.

Examination: Spare, but by no means emaciated; arcus senilis marked. Heart negative, so also the lungs except for scattered patches of rales in both backs and in the right axilla. Abdomen negative. Knee-jerks normal; no tenderness or loss of sensation. Spine straight and not tender.

Urine 1016, alkaline, trace of albumen, considerable pus and squamous cells. Blood: Red cells 3,810,000; white cells 17,000; hæmoglobin 55%. In the stained specimen polynuclear leucocytes were abnormally increased and three normoblasts were seen during a differential count of 500 leucocytes. Temperature 99, pulse 90, respiration 22.

1. What is the significance of the temperature in this case? If it continues at or below that point, infections (*e.g.*, phthisis or sepsis) are very unlikely.
2. What all-important diagnostic data are here lacking? Pupillary reactions, sputum examination, the twenty-four hour amount of urine.
3. If the knee-jerks had been absent, what other disease should be considered? Tabes dorsalis.
4. How are the lung signs to be interpreted? Localized bronchitis or œdema.
5. What further knowledge do we wish regarding the spine? Is it everywhere normally flexible?
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: The spine was found to be stiff in the lumbar region and spondylitis was considered. But the loss of appetite, the anæmia, and the leucocytosis pointed to something less purely local in its effects. Sputum examination, four times repeated, was negative and practically excluded phthisis. Abdominal aneurism would account for some of the pains, but should produce a palpable tumor. The pains are such as would be produced by pressure on the spinal nerve roots. Malignant disease of the prevertebral glands would explain the pains, the anæmia, and the loss of appetite. Autopsy confirmed this diagnosis and showed in addition numerous metastases in each lung — accounting for the pulmonary signs and symptoms. Hypertrophied prostate with slight cystitis explained the bladder symptoms.

   Prognosis: Death in the course of a year.

   Treatment: Purely symptomatic. A plaster jacket might relieve some of the pain by immobilizing the spine.

A girl of 19 is seen May 26. Her maternal grandfather died of phthisis. Family history otherwise good. She has always been rather pale and delicate, but had no definite or serious illness. Toward the end of February she consulted her physician for slight swelling of the glands on the left side of the neck. The temperature was slightly elevated when taken after this, and during the next two weeks the glands increased considerably in size and she had some cough, apparently due to bronchitis. Toward the end of March she began to improve and the glandular swelling to subside. The appetite increased and she got out. Two weeks ago she was less well; fever returned to a moderate degree, as did cough, and slight crepitus was heard under both clavicles. One week ago, the day being mild, she sat on the doorstep and experienced a sudden pain at the root of the nose, just between the eyes. This pain extended over the forehead, increased in intensity and was relieved more by cold than by hot applications. Four days ago without obvious cause she vomited once. The next day she vomited again and the headache became intense. For the past forty-eight hours she has retained nothing on her stomach. To-day, there was slight hiccough after vomiting and the menses appeared, the first time for three months. Morphia by the mouth gave her no relief. In the last twelve hours she has had three suppositories containing a quarter of a grain of morphia each, with only partial relief to her headache. Before the morphia was begun the pupils were large, equal, and reacted equally to light. Her aunt states that the pupils have always been large. They are now moderately contracted, equal, and respond normally. Photophobia. The pulse has ranged 90 to 100. Temperature 99° this morning, 100° last night.

The pulse is now 60 to 100, changing its rate quickly and frequently. Respiration easy. The mind seems clear, but she is very disinclined to talk or make any effort.

The glands in the right side of the neck are slightly enlarged. The heart is negative. No rales are detected over the fronts. The backs are not examined as it does not seem wise to disturb her to that extent. Abdominal examination gives negative results. The reflexes, superficial and deep, are not obtained. Urine negative. Neither the sputum nor the blood have been examined. There is no paralysis.

1. What can be inferred from the effect of the morphia here? That the headache was of an intensity rarely if ever seen except in organic brain disease.
2. Significance of the way the headache came on? The circumstances probably had nothing to do with it. The suddenness of onset is not characteristic of any single disease.

3. In what diseases do the pupils give the most important information? Tabes dorsalis, general paralysis, old iritis, morphia poisoning, aneurism of the aorta.
4. What cervical tumors are commonest? Adenitis (tuberculous or septic), Hodgkins disease, leucæmia, cervical rib, branchial cysts, cancer, and sarcoma.
5. What help could be gained by examination of the blood and sputa in this case? Normal blood would speak against meningitis, though in some tuberculous cases leucocytosis is absent. The presence or absence of malarial parasites is important, as malaria may cause marked cerebral symptoms. If the Widal reaction were absent and no basophilic stippling of the corpuscles present, we should have evidence against typhoid and against lead encephalopathy respectively. Sputum examination would help to settle the question of tuberculosis.
6. What other examinations should be made? Spinal puncture, Kernig's sign, Babinski's reaction, retinal examination.
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: The intensity of headache with photophobia and vomiting point to organic brain disease. The onset is more sudden than in most brain diseases, except meningitis. The family history of phthisis, the recent cervical adenitis, and apical bronchitis with fever suggest tuberculous meningitis. Lumbar puncture and retinal examination would settle it.

   All the symptoms here mentioned have occurred in brain tumor or abscess, but in most cases of these diseases, focal symptoms are present (paralysis, aphasia, Jacksonian epilepsy, local paræsthesia, astereognosis) and the onset is slower. In malaria there is almost invariably more pyrexia, and in lead encephalopathy there are usually convulsions and evidences of lead in other organs.

   Meningismus at the onset of some infectious disease (typhoid, pneumonia) is unlikely. on account of the severity of the headache, the moderate temperature, and the absence of positive evidence of any such infection. Tuberculous meningitis — that is, acute general tuberculosis with predominance of meningeal symptoms — seems the most probable diagnosis.

   Prognosis: Recovery is barely possible, perhaps once in one thousand cases. Death will probably occur within two weeks.

   Treatment: Lumbar puncture sometimes relieves headache as well as helps diagnosis. (What would be found?) Otherwise the prevention of bed-sores, the alleviation of symptoms, and the support of the patient's strength is all we have to work for.

A coachman of 45, of a very neurotic family, has had dyspepsia for fifteen years. Any worry or excitement brings on distress and sour eructations. Three years ago had "spinal meningitis"; since then never well in mind or body. Forgetful and bewildered up to the last two months, when he became much clearer and has since devoted himself to his health. Two spots, one over the left kidney and one on the top of his skull, feel hot to him. Also numbness on the left leg, less noticed when he is busy. Left hand always colder than the right.

Since the fever three years ago his dyspepsia has been worse. Almost any food distresses him after a time. More than one half a cupful of any liquid causes vomiting, and despite care he vomits very frequently. No blood or brown stuff in vomitus, which consists of food and slime.

Pain and tenderness in the epigastrium are almost incessant. Appetite excellent, bowels always costive, sleeps poorly.

Examination: Rather thin, good color, tongue protruded very far. In epigastrium, a resistance uneven, soft and doughy in feel, dull on percussion and very tender. The lower border of it is well defined, especially on the left. At times, movements, apparently peristaltic, can be felt there. Visceral examination is otherwise negative

The stomach tube was passed and abundant free hydrochloric acid found, but the ingestion of over 6 ounces of liquid caused the patient great pain, which lasted for two hours after the tube was removed.

The patient was constantly expectorating saliva, and stated that milk always poisoned him, and that the only food that agreed with him is wild game. A partridge was procured for him, but he had a bad night after it, because, as he said, he tasted some of the shot with which the partridge had been killed. He remained in the hospital from November 1 to November 11, 1892, and then left unimproved.

Diagnosis? Prognosis? Treatment?

Diagnosis: The first paragraph and the last two point strongly to a gastric neurosis, and this diagnosis still stands on the hospital record book to-day. Against this, however, are the small capacity of the stomach (six ounces causes great pain and often vomiting), the peristaltic movements in the epigastrium, and the other physical signs at that point. A contracted stomach with pyloric obstruction and abundant free HCl is a very unusual combination, but to that the signs point. At autopsy (three months later) exactly this combination was found. The gastric wall was from one half to three quarters of an inch thick, the capacity about seven ounces, the scar of a large ulcer near the pylorus and great thickening and stenosis of the latter. The case is very important because both neurasthenia *and* organic disease were present, and the neurasthenic aspects altogether blinded us to the rest.

Prognosis and Treatment: An operation should of course have been done, and with this the patient might well have recovered within a few months.

A single man, 37, in business, six feet two inches tall, weighing 246, states that several members of his family have had heart disease, one dying suddenly. He is seen March 3, 1903. He denies lues, but has had five or six attacks of clap, the last three months ago. Coitus is not very frequent. He drank freely until three years ago when he had phlebitis in the left leg. At this time he weighed 200, was treated at Aix-les-Bains, lost 30 lbs., and felt better for it. Since then he has taken three or four whiskies a day. A year ago he was under medical care for a short time with indefinite symptoms, the pulse never rising above 100. Last summer he played 27 holes at golf without inconvenience. In October, 1902, he had business worries which kept him awake more or less for several weeks, and during this time he drank more freely again. He takes no regular exercise; is fat, flabby, and colorless.

Four days ago he called in his physician for vague discomfort in the upper abdomen and irregular bowels. The heart's action was then regular in force and rhythm, varying in rate from 160–180, only countable with the stethoscope over the apex. He sleeps with only one pillow, on either side, and has not been directly conscious of his heart, even on such exertion as is incidental to his life. In spite of absolute rest for four days, the heart continues rapid. Temperature normal; urine negative. He wishes to get up and attend to business. He does not seem, and says he does not feel, nervous. The appetite and digestion are good enough; the tongue clean, the gums healthy. The heart-beats are quite regular, 160 per minute, counted with the stethoscope, and the rate does not vary whether he sits, stands, or lies down. The cardiac impulse is visible and palpable only when he lies on his left side; it can then be localized about an inch to the left of the nipple, in the fifth space. Percussion yields somewhat unsatisfactory results on account of the thickness of the chest wall, but dulness seems to extend slightly beyond the nipple as he lies on his back. The sounds are clear, save in the left lateral decubitus; in that position, a slight systolic murmur is audible at the apex. The lungs and abdomen are negative. The superficial reflexes are absent; the knee-jerks slight. There is no tremor. There is slight œdema of the legs and a corded vein (?) can be felt in the left calf. He wears Boston garters.

1. What form of alcoholic drink has most often a demonstrable and permanent effect upon the heart? Beer. A hypertrophy and subsequent dilatation often occurs. Whiskey usually produces only temporary weakness.
2. What inference is suggested by the absence of arhythmia in this case? Myocardial degeneration usually produces arhythmia. Any disturbance of car-

diac function *with* arhythmia is more serious than a similar disturbance *without* it.

3. Among the methods of examination not yet employed in this case, which are likely and which unlikely to yield valuable information? We should ascertain whether the eyes are prominent or the thyroid are enlarged. These data will help to decide for or against one cause of tachycardia — namely, Graves' disease. The urine should be examined. If it showed the evidences of chronic nephritis the heart symptoms might be thus explainable. It would be valuable to know how his heart reacts to exertion. Organic heart weakness is usually increased by slight exertion, while "functional" weakness is often lessened. If the "clap" is healed, involvement of the heart in this infection becomes unlikely. Blood-pressure measurements, if normal, would be reassuring. If he uses tobacco to excess the symptoms may be due to this cause. Blood examination would probably yield no important information.
4. Has the venereal history any relation to the present symptoms? Probably not. Gonorrhœal endocarditis or myocarditis produce fever and more definite evidences of valvular deformity; further, his gonorrhœa is apparently healed.
5. Causes and types of tachycardia? Any physical or emotional activity, many infectious diseases and toxic states, cardiac weakness and dilatation from any cause, Graves' disease, "paroxysmal tachycardia."
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: There was no exophthalmos or goitre; the urine was normal; tobacco was used to excess; the gonorrhœa was healed; blood pressure was normal and was increased (not decreased) by exertion. It should be noted that the position of the palpable apex beat was normal *for the position in which the patient lay*. The attack is too long to be classed as "paroxysmal" tachycardia. There is no good evidence of infection or of cardiac dilatation. A subjective "sense of well-being" such as is here present is not often seen in organic heart lesions with tachycardia.

   There is no evidence of passive congestion anywhere, for in a fat man slight œdema of the legs is physiological, especially with varicose veins such as appear to be here present. Hence we have no considerable heart weakness. Toxic extra-systoles, due to the effect of an excess of tobacco (and perhaps alcohol) on an otherwise healthy heart, seems the probable cause of the tachycardia in this case.

   Prognosis: Such "functional" upsets of a healthy heart are usually over within a few weeks. The failure of the heart to slow down under rest is surprising but need not discourage us.

   Treatment: Possibly he is being kept too quiet. If his heart's power is fair (as it seems to be) he will be the better for using it a little. This will ease the psychical tension and probably slow the heart. The omission of all tobacco and alcohol and the lapse of time are the most important means of cure, but Nauheim baths and motions (carried out at home) will hasten recovery.

July 20, 1905, a girl of 16, previously healthy, was attacked in the morning by pain in the sternum with a sense of pressure. Later the pain extended round the chest and became severe on any movement of the intercostal muscles — so that breathing was painful and shallow. She felt feverish and nauseated, and in the evening her temperature rose to 101°. She slept fairly well and next day her fever was gone and she was almost well; walked, drove, and ate her meals with good appetite. On the third day the pain and fever returned and both were worse than before; the pain extended round both sides of the chest, from the armpit to the bottom of the ribs, and also into both shoulders. In the evening the temperature was 103°. Next day she remained in bed feeling greatly improved, but still somewhat sore and achey.

On the fifth day the pain came three or four hours earlier than in the previous attack, and was agonizing in character. The temperature reached 104° in the evening.

There was no chill, no sweating, and no cough at any time. Visceral examination was negative — also the urine. The blood was not examined. Calomel was given on the fourth day, without relief.

1. (*a*) Causes of severe thoracic pain? (*b*) Of mild thoracic pain? (*a*) Pleurisy (pneumonic, tuberculous, or "simple"), angina pectoris (organic or functional), intercostal neuralgia, muscular pain ("pleurodynia"), spondylitis (nerve-root pains), trichiniasis, aneurism. (*b*) Infectious diseases, fatigue.
2. By what additional data could diagnosis be made easier here? A careful history with special reference to a possible source of infection; a thorough examination of the blood and of the spleen.
3. Diagnosis? Prognosis? Treatment?

   Diagnosis: Paroxysms of fever recurring every second day with complete apyrexia on the intervening days, almost never occurs except in malaria. Pyogenic infections (including advanced phthisis) may in rare cases produce such a fever curve, but in these conditions the patient is never as well on the intervening days as this patient was, and usually shows well-marked local lesions of some kind. The pains of this case are very unusual for malaria but not unknown, and it is a safe rule to assume, until it is proved to the contrary, that *any* symptoms that recur every forty-eight hours, with fever, and disappear completely on the intervening days, leaving no physical signs of disease, are due to malaria. The blood was not examined in this case until after quinine had been given with complete and permanent relief of all symptoms. After this no parasites were found in the blood. Abdominal pain is not infrequently the only striking symptom of malaria, but thoracic pain is rare.

   Prognosis: Every case of tertian malaria can be completely arrested in a few days by quinine. Cases resisting quinine for a week are not tertian malaria — the only form seen in the northern part of this country.

   Treatment: Morphia subcutaneously for pain, fever, or chill. Quinine gr. V t.i.d. in capsule or solution for three days. Then gr. III t.i.d. for a week.

A Lithuanian teamster, 48, entered the hospital, April 22, 1904, with the following history: Parents died of old age. He uses thirty-five cents' worth of tobacco a week, alcohol occasionally. He has always been well until April 15, when he went to work feeling all right. In the afternoon his neck began to pain him, he was chilly, then felt hot, and sweat a good deal. Later his neck began to swell and became more painful. His throat was sore, dry, and painful on swallowing. Two days later he started to work, but had to give up and came to the hospital.

Physical examination showed a well-nourished man with slight prostration. Slight conjunctivitis. Tongue protruded in median line. Throat dry, red, with considerable dirty secretion on the walls of the pharynx. Slight cyanosis of the face and finger-tips. Neck short, thick, and reddened at the base with brawny induration. Redness and induration extends down over the upper part of the chest. Tenderness and swelling at the posterior edge of the sterno-cleido-mastoid muscle at either side.

Inspection shows no enlargement of the veins of the upper chest or of the arms. Percussion of the chest shows dulness over manubrium, extending one finger's breadth on either side. Lungs are apparently normal. Heart's apex in fifth interspace nipple line. Right border at right sternal edge. Sounds distant, no murmurs heard. Pulse 120, regular, fair volume and tension. Abdomen full, tympanitic, not tender. Liver and spleen not enlarged. Knee-jerks present, no paralysis, no Kernig, no œdema, no general glandular enlargement. Blood showed red cells 5,001,800, white cells 21,700, Hæmoglobin 90%. Differential count of 200 leucocytes showed: Polynuclears 78%, lymphocytes 22%, eosinophiles 0. Urine normal, acid, sp. gr. 1021, albumen slight trace, chlorides diminished. Sediment: numerous hyaline and fine granular casts, with occasional cells adherent. Occasional free mononuclear cells, rare blood corpuscle. Temperature 101.4°, respiration 25.

April 24. Delirium for past two days requiring restraint. Quieter this morning. Throat somewhat cleaner, less cyanosis and tenderness in neck. Otherwise physical examination unchanged.

May 1. Temperature has ranged from 101.4° to 99.5° to-day. Pulse from 120 to 100, respiration from 25 at entrance to 35 to-day.

May 2. Tumor at side of neck apparently increasing in size. Some œdema over the neck, and the small veins of that region more prominent. Bronchial breathing over the right infrascapular region, with a few rales just below the angle of the scapular. Some cough and

frothy sputum. Laryngoscopic report: "No œdema or paralysis of recurrent laryngeal, but some pressure œdema of left ary-epiglottic fold."

May 6. Considerable cough and expectoration. Some abdominal pain; has lost considerable weight. Fever lower; cervical tumor decreasing.

1. Causes of substernal percussion dulness? Aneurism, enlarged bronchial glands (tuberculosis, pseudoleucæmia, sepsis, cancer, sarcoma), tumors of the thyroid or thymus gland, mediastinal abscess.
2. Significance of the lack of eosinophiles here? Eosinophiles may disappear in a severe type of any infection which causes leucocytosis, occasionally in toxic conditions associated with leucocytosis, and in some severe anæmias. Their reappearance is always a favorable sign.
3. How is the patient's delirium to be accounted for? Any severe infection may produce delirium, though meningitis and pneumonia most often do so.
4. Of what diagnostic value is the fact that Kernig's sign is absent? Kernig's sign is usually present in meningitis of any type. Its absence, therefore, tends to exclude meningitis.
5. What further facts are needed for diagnosis in this case? The sputum should be examined for tubercle bacilli. No other data are essential, but a Widal reaction might help to exclude typhoid, and a spinal puncture to exclude meningitis.
6. Diagnosis? Prognosis? Treatment?

   Diagnosis: The physical signs of disease are chiefly in the neck and upper thoracic region. Tuberculosis of the lung, meninges, and cervical glands would account for some of the signs, but would not be likely to produce so much pain and local œdema. The sputa were negative for tubercle bacilli on repeated examination. Venous thrombosis would not explain the inflammatory reaction in the neck and would cause more œdema and more enlargement of the superficial veins. The same evidence is valid against mediastinal new growth or abscess. Deep-seated inflammation in the neck (with or without pus) is the most defensible diagnosis, — Ludwig's angina. The Widal reaction was negative.

   Prognosis: The cases usually run a severe course, and unless pus can be located and removed are often fatal within a fortnight. In this case, however, defervescence and improvement of all symptoms went on slowly but steadily after May 6, and in a few weeks he was well — substantially without interference other than good nursing.

   Treatment: To find and remove pus when it is present, and to support the patient's strength, are the main indications.

Mrs. M., 51, is seen August 9, 1905. She has been in bed since July 4, suffering from "a complication of diseases," and her medical attendant has been changed several times.

She had nervous prostration fourteen years ago, and has never been well since, but except for children's diseases she has had no other definite illness. She has had eight children — the last six years ago — and, until recently, has done most of the housework for the whole family.

Her present illness began July 4 with diarrhœa, vomiting, fever, and sweating. These symptoms passed off in about three weeks, but there have been suggestions of a return of them several times, and she has not regained her full strength. Insomnia is a very troublesome symptom, and in the long, wakeful hours she sometimes has spells of "weakness," for which aromatic spirits of ammonia is taken with some relief. There are also "smothering spells" when she feels as if she must get up and walk, and is restrained only by the strict orders of her physician.

She has never been a hearty eater, but the appetite is now very fair. There is no pain and the bowels move with the aid of laxatives.

Examination showed a stout, pale woman, with a temperature of 99°. The size of the heart could not be exactly determined on account of fat, but the sounds were normal and were loudest in their normal sites. The peripheral arteries were normal. At the beginning of the examination fine crackles were heard at the base of each axilla, but they disappeared after a few deep breaths and were not heard again. Liver dulness begins at the seventh rib, and the edge can be felt below the ribs. Otherwise visceral examination is negative. Hæmoglobin 90%. Urine normal.

Diagnosis? Prognosis? Treatment?

Diagnosis: A feverish gastro-enteritis five weeks ago; now weakness, insomnia, and smothering spells, with a desire to move about — such are the main complaints. In a woman of 51 these symptoms suggest arterio-sclerosis or myocarditis, but the physical examination gives no support to these diagnoses, and without physical signs one cannot make them. The crackles in the lungs would have been significant had they persisted, but *transient* crackles at base of the axilla have no pathological significance. The liver is low — both the upper and the lower border — but shows no evidence of enlargement, and simple ptosis, whether of the liver or of all the abdominal organs, is not likely to explain the symptoms of this case. The main question is: Has the woman any disease at all? Are not her weakness and insomnia the result of staying in bed? This diagnosis was in fact verified by the results of getting up and to work. In a few weeks the woman was perfectly well.

Prognosis and Treatment: The reassurance that one can give after convincing himself by a thorough examination that the organs are sound is the most important medicine for such a case. The stimulus of work and exercise, with the increased appetite and sleep resulting, will usually complete the cure.

Mr. V., a theatre usher of 47, unmarried, lost his voice six months ago. Since then it has gradually improved, until now he speaks quite audibly. Otherwise he has been well and worked steadily and hard,—though occasionally he has felt an ache between his shoulders for one half a day or so. On one occasion, three months ago, this pain occurred while he was walking and almost took his breath away for a few minutes. Since this time there has been no pain. Insomnia has troubled him for many years, and he gets little sleep after 4 A.M. He admits that he is of nervous temperament, and has been considerably worried. There has been no cough, no emaciation, and, so far as he knows, no fever. Appetite good, bowels regular. His regular weight is 158.

Examination shows a healthy-looking man with no fever. Weight 160. The heart's apex in the fifth space, three-quarters of an inch outside the nipple. The heart sounds are clear — the aortic second loud, low-pitched, and easily palpable. The pupils are equal and react normally. The pulses equal and synchronous. Bronchials slightly tortuous and have a lateral excursion. No thrill or abnormal dulness in the front of the chest.

At the left apex behind, there is dulness, increased voice and fremitus, and whistling breathing (stridor). In the right side of the neck is a mass the size of a goose's egg; its lower portion is hard and seems connected with the clavicle. Above, it pulsates strongly. The whole is smooth and not tender. Laryngoscopic examination shows the left vocal cord in the cadaveric position. The blood and urine are normal and visceral examination is negative, except for the deviations noted.

1. Causes of accentuated aortic second sound? Increased peripheral resistance due to arterio-sclerosis, nephritis with high tension pulse, severe muscular exertion, aneurism.
2. Causes of hoarseness or aphonia? Laryngitis ("simple" or tuberculous), syphilis, laryngeal tumors, paralysis of a vocal cord or partial paralysis of both, hysteria.
3. What is the cervical tumor? It was at first diagnosed as aneurism (of the carotid or subclavian), but proved to be a cervical rib crossed by the subclavian.
4. Diagnosis? Prognosis? Treatment?

   Diagnosis: The important signs are: paralysis of the left vocal cord, arterio-sclerosis with resulting cardiac hypertrophy, solidification and stridor at the apex of the left lung. An X-ray plate of the chest showed a large aneurism of the aortic arch. The puzzling things in the case were (*a*) the pulsating tumor in the *right* neck, which one tried naturally but unsuccessfully to associate with the paralysis of the *left* vocal cord, and (*b*) the absence of any signs of aneurism except the paralyzed vocal cord.

   Prognosis: Most cases of aortic aneurism progress and kill, despite treatment, within two years. A few remain quiescent or even wholly latent for many years.

   Treatment: Several weeks of rest in bed with light diet and KI gr. x–xx t.i.d. serves to improve the symptoms and lengthen the course of some cases.

Called to see a young girl of 21, single, who is said to have had, twelve hours before, a large pulmonary hæmorrhage,—a pint, after a few days' cough. Previously well, but nervous; easily startled and frequently troubled with food "going the wrong way," and causing symptoms of temporary spasm of the glottis.

When seen, could only speak in a whisper; throat examination was impossible on account of gagging. Lungs entirely negative, except slight dulness and prolonged expiration at right apex. Heart somewhat rapid; systolic murmur at base of the heart, loudest in pulmonary area. At the root of the neck, in front, a swelling size of a hen's egg, smooth, soft, not tender. Abdomen negative. Face very pale, lips less so. Slight œdema of ankles.

Urine pale, acid 1018; albumen, slightest possible trace; 1% of sugar; amount, 2½ quarts. Sediment, mostly squamous and neck of bladder cells. Few small hyaline casts.

Blood: Reds 4,800,000; whites 10,000; Hg. 60%.

1. What further information is needed about the hæmorrhage here? Did any one see the blood come up? She may be a malingerer. Was the blood mixed with air or food?
2. If hemorrhage were due in this case to phthisis, what physical signs should one expect to find twelve hours after? None. The earliest physical signs usually appear months later.
3. What else may cause such hemorrhage? Gastric ulcer, esophageal varices in cirrhosis, leaking aneurism.
4. How is the œdema of the ankles to be accounted for? Probably anæmia; possibly nephritis.
5. What other causes of œdema can you name? Cardiac weakness, obesity, neuritis, thrombosis, varicose veins, or other local causes of venous obstruction.
6. Significance of the lung signs in this case? They are within physiological limits.
7. By what further methods of examination could their significance be more definitely determined? Sputum examination after administration of KI. Temperature records, tuberculin reaction.
8. Name three causes of systolic murmurs loudest in the pulmonary area. "Functional" changes, aneurism, pulmonary stenosis.
9. Can the neck tumor be connected in any way with the glottic spasm? Why or why not? No, because the tumor is too small and too far from the glottis.
10. From the data given about the blood, what should one expect to find in the stained blood-film? Small, pale red cells, not otherwise abnormal. Normal leucocyte percentages.
11. What conclusions should be drawn from the urine in this case? None that are definite. The causes of the albuminuria and of the glycosuria should be sought.
12. Diagnosis? Prognosis? Treatment?
    Diagnosis: Goitre and tachycardia suggest Graves' disease. We do not know whether or not the eyes protruded or whether there was tremor. Pulmonary

bleedings, glycosuria, albuminuria, and anæmia have repeatedly occurred without known cause in Graves' disease. Phthisis and malingering must be excluded by the methods suggested under questions one and seven. Aneurism causes aphonia and (if it leaks) bleeding. There are none of the other physical signs of aneurism in this case, but an X-ray may be needed to exclude it. The glottic spasm and aphonia occur in many neuroses and are characteristic of none. Exophthalmic goitre turned out the true diagnosis, other alternatives being excluded.

Prognosis: Most cases last for years; many get well of themselves; some are never discovered (*"formes frustes"*). Relapses are common. Cardiac dilatation and diarrhœa may kill after an acute or chronic course.

Treatment: Hygienic and supportive, with encouragement. Drugs are probably useless. A thyro-lytic serum has recently been prepared and apparently does good.

Fireman, 57 years old, had scarlet fever at 9 years, apparently without ill results. Otherwise he has been always well till six months ago, when on a vacation he ate some canned oysters in the form of a stew. One half hour afterwards breath was suddenly shut off. No pain, vomiting, or other symptoms. Troubled with respiration ever since when in midst of fire smoke. Lost 30 lbs. in three months. Four weeks ago, when turning in bed, noticed a swelling in the left loin which seemed to move with change of position. No pain or tenderness and no change in urine.

Examination: On left side two tumors are felt below the ribs; one above and in front feels like a spleen. The other is more rounded and deeper. Both move with respiration. The lower tumor is somewhat tender and apparently elastic. Belly otherwise negative. Lungs negative. Heart not remarkable except for a loud ringing aortic second sound. Brachials tortuous and move laterally. Urine 1018, 40 oz. in twenty-four hours. Slight trace of albumen. Few hyaline and fine granular casts, some with cells or fat on them. Blood normal, no fever.

1. What are the common causes for the appearance of slight dyspnœa in a man of 57? Arterio-sclerosis and its results, emphysema, obesity.
2. What was the action of the canned oysters? Possibly dyspeptic flatulence, embarrassed cardiac action by direct pressure through the diaphragm. Probably, however, the association was accidental.
3. (*a*) What abdominal tumors move most freely with respiration? (*b*) What least freely? (*a*) Those connected with the liver, stomach, and spleen; (*b*) those connected with the kidney and pancreas.
4. Enumerate some of the conditions in which such a urine is often seen? In passive congestion, fevers and after exertion, when there is bile or sugar in the urine, in arterio-sclerosis and chronic interstitial nephritis.
5. What important and simple methods of examination have been omitted? Inflation of the colon, palpation in a warm bath.
6. What questions should be asked with reference to the loss of weight? Have appetite and sleep been as good as usual?
7. Diagnosis? Prognosis? Treatment?

   Diagnosis: An abdominal tumor, painless, slow growing, and producing little or no disturbance of any function, is the chief feature of the case. The tumor occupies more nearly the position of the left kidney than of any other organ. It is rounded and elastic. Renal abscess, cyst, or hydronephrosis suggest themselves. The absence of fever, pyuria, leucocytosis, and pain are against abscess, and the absence of any pain or disturbance of micturition make hydronephrosis unlikely. The inflated colon traverses the tumor. At operation a congenital cystic kidney weighing 870 grams was found and removed. The dyspnœa, however, continued, and a year later autopsy showed general arterio-sclerosis with cardiac hypertrophy and dilatation, general passive congestion and terminal streptococcus sepsis.

   Prognosis and Treatment are sufficiently suggested in what has been said.

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